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WEEKLY | NEW YORK—THURSDAY, JUNE 20, 1907—CHICAGO | 10 CENTS



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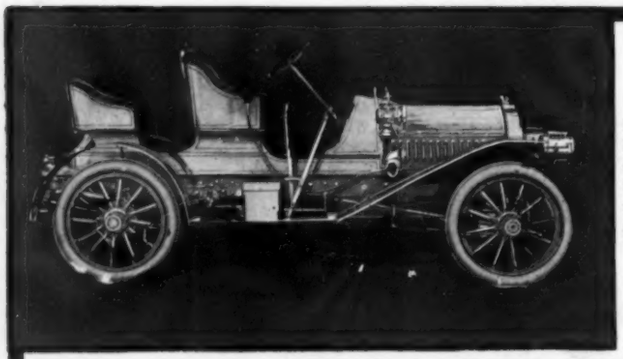
Member Association Licensed Automobile Manufacturers

**CORBIN MOTOR VEHICLE CORPORATION of New York, 1888 Broadway**



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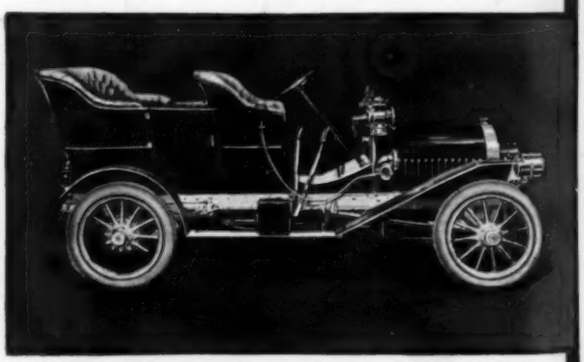

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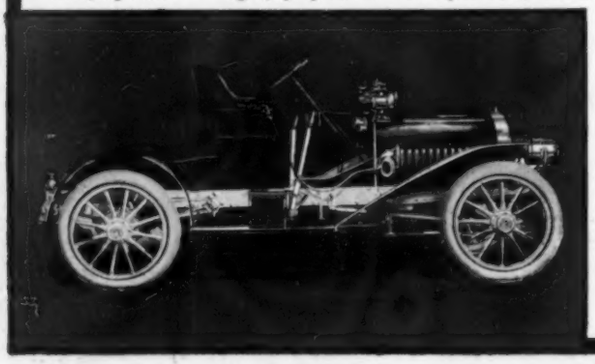
will go where big, high powered, heavy cars will go, with less tire trouble and at a lively pace. Because it is well built, of first class material and workmanship throughout, it is reliable, and upkeep expense is slight, with proper care. Wheel base, 103 inches. Weight, 1900 pounds. Horse power, 24. Price, $2200.



Look at the lines of the

## Mora Roadster

body critically—it's artistically correct. But it's the mechanism that made the Mora famous in a year.

*SPECIFICATIONS*—Four cylinder vertical engine, 24-horse power, water cooled. 98-inch wheel base; 32-inch wheels. Weight, 1700 pounds. Entirely mud proof. Price $1800. Surrey seat $125 additional.

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# THE AUTOMOBILE

## Germany Holds First Imperial Cup Race

FLORAL ARCHES WERE ERECTED IN EVERY VILLAGE ON THE COURSE.

HOMBURG, GERMANY, June 14.—Felice Nazzaro, on a Fiat machine has captured the German Emperor's Cup, which all day long has been invitingly displayed to contestants and observers on the royal grandstands at Kloster Thron. His time for the four rounds of the 125-kilometer sinuous mountain circuit was 5:34:26, which is at the rate of 55.5 miles an hour. Considering the extraordinarily difficult nature of the course, the time is remarkably fast. Two years ago on the Auvergne circuit, which in the matter of turns and grades presents much similarity with the German course, Théry averaging 48.7 miles an hour for about the same distance; as the machines in the German race are lower in power than those engaged in the Gordon Bennett contest, the conclusion to be drawn from the comparison is a decided increase in the efficiency of the racing automobile of 1907 over that of 1905. On the Taunus circuit of 1904, much easier than this year's course, Thiéry's average, then considered very fast, did not exceed 59 miles an hour.

Second position in the German Emperor's race was secured by Hautvest, a Belgian who has won fame in touring competitions in his own land, but who has not previously figured in international speed tests. His Pipe machine, also a Belgian, was but four minutes 44 seconds slower than Nazzaro's Fiat. Michel, on an Opel machine of German origin, secured third position, but thirty-nine seconds behind the Belgian. Fifth and sixth positions have been secured respectively by Wagner and Lancia on Fiat racers, thus making the premier Italian factory the most successful in the contest. Henry Fournier, the ex-champion of France, who has returned to the racing game after an absence of several years, secured eighth place in an Itala, an Italian car of which he is the exclusive Paris selling agent.

Owing to the large number of entries, the race for the German Emperor's Cup was run in two stages, a preliminary on Wednesday to select forty to compete in the final, and the decisive contest on Thursday. Thus there were never more than forty machines on the course at once. Two rounds of the circuit only were run on the first day, and four in the final. France, Italy, Belgium, England, Austria and Switzerland were the nations engaged; America had no representatives. Heavy rain had made the course dangerous on the first day, and one fatal accident had to be recorded. For the final, however, the roads had become thoroughly dry, and all passed off satisfactorily.

The royal party, which assembled before 6 o'clock at the grandstands erected at Kloster Thron, comprised Emperor William, Prince and Princess Henry of Prussia, the Grand Duke and Duchess of Hesse, Prince Frederich Charles of Hesse, and other notables from the court. Thousands of spectators, brought to the scene of the race by special excursion trains, watched the contest, which was full of interest from start to finish. At the end of the first round a German car was leading in 1:27:17, with Hautvest, the Belgian, close behind and Nazzaro third. At the end of the third round Hautvest was first, his time being 4:15:46. Nazzaro, however, was pressing him close, and on the last round forged ahead and captured the cup by the narrow margin of four minutes forty-four seconds. The prize consists of the Emperor's Cup, a vase and a table centerpiece from the royal porcelain manufactory at Charlottenberg.

Only two international races have been run in Europe this year, the Targa Florio and the German Emperor's race, in both of which Felice Nazzaro has been victorious. Last year he was second to Szisz in the French Grand Prix, and has twice figured

NAZZARO WEARING HIS HAPPY VICTOR'S SMILE.

NEAR SETTAMBOURG, WHERE THE RACERS WENT ALL OUT.

URSEL'S NARROW STREETS CALLED FOR SKILLED DRIVING.

in the Vanderbilt Cup races. Nazzaro's racing career commenced in 1900, when he was mechanic to Lancia; for some time he was chauffeur for Vincenzo Florio, the donor of the Florio Cup. Up to this year he has never secured first position in any international event, though having driven in all of them.

This second decisive Italian victory has considerably raised the chances of Fiat securing the Grand Prix, to be run in less than three weeks' time. Nazzaro, Wagner and Lancia are public favorites, as is indicated by bets on the race, even French sportsmen regarding their chances of victory as exceptionally bright.

# START OF THE HERKOMER 1,140-MILE TOUR

LINDAU, GERMANY, June 8.—We have just finished the first three stages of the monster German endurance contest for the cup donated by Professor Von Herkomer, the auto-loving artist. Altogether the 198 machines furnished by Germany, Italy, France, Belgium, England and Switzerland are called upon to cover 1,140 miles on a closely calculated time schedule, to climb a few hills, give a good display of speed, show that they are comfortable and elegant, do not drink up too much water, have good tires—in short, to do all that an automobile can reasonably be expected to do. It is a complicated contest and one needs something of the Teutonic in his constitution to thoroughly understand the technicalities of the event.

Dresden, Saxony's ancient capital, was alive with automobiles the two days preceding the commencement of the tour. There seemed to be enough for every inhabitant, and certainly every inhabitant was as enthusiastic as if he owned one. At the Exhibition Palace there was a record crowd of royalty and dignitaries of every degree, and owners and chauffeurs chattering every language known to Europe.

Sharp-eyed officials pounced upon a bunch of machines, the bodies of which they declared had been doctored; ten Opels, fourteen Adlers and several Mercedes being told to retire on account of coachwork which contained too much aluminum under glossy layers of varnish. After protests, discussions and explanations the Opel and Adler heretics were allowed to run unofficially. The Mercedes were taken back into the fold, but the others, despite the vehement protests, were forced to remain in what was dubbed the "excommunication chamber." Twice Sorel and his French machine were sent away, once to have the road wheels completely varnished, and another time to repair a neglected detail of body work.

Altogether there were 134 official starters, but about thirty machines followed the tour though not recognized by the committee as competitors. Three ladies drove contesting machines: Miss Dorothy Levitt a six-cylinder Napier, Madame Lehmann a Metallurgique, and Madame Lili Sternberg a German machine. Sorel on a Lorraine-Dietrich led the procession—or, more correctly, he followed the official patrol car—and arrived first for lunch at Leipsig. At Eisenach, the end of the first stage, 225 miles, nearly all reported safely. Among the exceptions were a Bianchi, which overturned outside the city, a Berliet which demolished a wall, a Porthos and a Beckmann in collision. Flowers, music and hurrahs greeted the competitors along the entire route, and native enthusiasm was shown everywhere.

At seven o'clock 142 machines started out from Eisenach for Mannheim, 210 miles distant, through picturesque valleys which we were unable to enjoy by reason of an annoying drizzle continuing to the lunch hour at Wurtzburg. There the sun broke through and the rest of the journey was magnificent. Dr. Rudolph Stoess, last year's winner, abandoned during the morning as the result of an accident to his steering gear. The car ran violently into a stone wall, with happily no injury to passengers. A 70-horsepower Stoewer—No. 13—driven by its owner, took a turn too quickly and capsized, the car being completely demolished, but the occupants free from injury. Sorel's Lorraine-Dietrich caught fire and was so seriously damaged that the loss of time in effecting repairs destroyed all chance of winning.

Through the Black Forest and along the borders of the Rhine was a magnificent run, enjoyed by all. One hundred and twenty-eight machines checked into Mannheim, the first one behind the pilot car being a Mercedes, driven by M. E. Landenburg, who won the trophy in 1905. In order to put down inconsiderate driving, five machines were disqualified for having caused accidents to other cars or users of the road.

Mannheim to Lindau, with a stop at Frendenstadt for lunch, comprised the third day's run of 232 miles. Good roads all the way, with some picturesque bits along the banks of Lake Constance, allowed of easy going. Two machines, however, dropped out of the morning run, and in the afternoon a number of accidents had to be recorded. A workman trying to save his dog from a car was himself knocked down and injured, a child was injured by a Porthos machine, a Bianchi ran into the parapet of a bridge, an Opel collided violently with a house and an Adler received serious injuries as the result of an encounter with a trolley car. Total number of arrivals at Lindau is 124.

Saturday night we shall reach Munich, remaining there all Sunday, Monday night we shall travel to Augsbourg, undergoing a speed test en route, and on Wednesday evening we are timed to reach Frankfort, where there will be a banquet, meeting of the jury, distribution of prizes, speeches, etc.

# CLEVELANDERS HOLD CLIMB ON STUCKY HILL

CLEVELAND, June 17.—In spite of two postponements the annual hill climbing contest of the Cleveland Automobile Club pulled off Saturday was a tremendous success. As stated last week the property owners along the old hill at Gates Mills raised objections at the last moment and the club had to call the event off and cast about for another hill. Secretary Goddard, of the Cleveland Automobile Club, spent the greater part of the week scurrying about the countries within fifty miles of Cleveland looking for hills, and he finally located a good one.

The incline bearing the inelegant name of Stucky Hill is located thirty miles east of Cleveland on the road to the village of Chardon, a location which comes about as near being off the map as any place within a hundred miles of the Ohio metropolis. Not only was it a good hill, but it answered another important requirement in that it was so far removed from civilization that there are few people to complain if the dust was stirred up and the speed limits exceeded. City people who were unfortunate enough not to secure a seat in an automobile had to take the trolley line to Chardon and then drive—or walk—four miles to the hill. The villagers did what they could to provide transportation in the shape of farm wagons, hay ricks, etc., but the facilities were inadequate.

There were no objections from the country people. In fact, it proved an event which will long be talked about by the simple ruralties of Geauga County. The farmers for miles around laid aside their work and drove to the hill.

### Timing and Other Arrangements Were Excellent.

The hill was a good one, about 7-10 of a mile long, fairly straight and made up of a series of pitches, there being three quite steep ascents, interspersed with long grades not so severe and lined with steep banks, which were fairly covered with the crowds. The club spent several hundred dollars in leveling off the rough spots and widening certain places, and in this they were assisted by the farmers who were very friendly.

The facilities for timing were perfect. In addition to the telephone line stretched over the course, a chronograph furnished by the Warner & Swasey Company, of Cleveland, manufacturers of astronomical instruments, was brought into play. This device gave a written record on a roll of the time each car spent in making the ascent. The outfit was situated at the finishing tape in a covered stand erected for the purpose. It was operated by and in charge of Walter Baker, of the American Ball Bearing Company, through whose courtesy it was provided.

The public interest shown in the event was evidenced by the fact that the Cleveland afternoon papers strung special wires from the hill to the village of Chardon, where operators were placed and repeated the reports, over other special wires by way of Painesville, fifty miles to Cleveland. In spite of the terrific bursts of speed by some of the larger cars, there were no accidents.

The contests themselves were faster and more interesting and exciting than at any previous Cleveland contest. Walter White, in a special White steamer, wrested the honors for best time from the Stearns people, who in previous years have vanquished all comers in Cleveland events. But the Stearns people partly satisfied themselves by taking the cream of the events for stock cars of the heavier class. In his first attempt Walter White made the ascent in 58.5 seconds, and it looked like easy money for the big Stearns six cylinder, which had just been brought out. But on his second attempt White brought out another car, almost a duplicate in appearance to the famous "Whistling Billy" of track racing days. Nearby spectators said White's steam dial showed 1,600 pounds when he opened the throttle, and the car fairly jumped into the air. It was the quick starting of his car that gave White the advantage in every event. At hardly any time were the four wheels on the ground at once, and the judges at the finish estimated that the White demon was going ninety miles an hour when she crossed the tape on the comparatively level stretch approaching the finish. Frank Stearns did not drive his own car this year, but Frank Leland and C. Schilpp divided honors with the Stearns machines, both winning firsts, the former driving the new six-cylinder to victory. A. L. Campbell, in the Darracq of Vanderbilt Cup fame, covered the course in 51 seconds in the eighth event, but met with an accident in the free-for-all, while in the handicap he did 54. Herbert Lytle and E. Grady sent Pope cars up the hill in less than a minute. M. J. Roseboro, of the Ford Company, met with the greatest success of the day, winning three firsts, victories going to the six-cylinder roadster, the six-cylinder touring car, and the four-cylinder runabout. Henry Ford, of the Ford Company, went home jubilant after a remarkable afternoon's work. The Reo finished first in its class, but was deprived of another victory by the action of the committee in disqualifying one of the cars on the claim that it was out of its class. Jackson cars, under various drivers, carried off four firsts, and might have won a clean score in all starts had not C. M. Paxon met with a slight accident. The Stoddard-Dayton, in the light runabout class, won easily from a good field. The special event in which the Baker electric participated proved that an electric can be a remarkable hill-climber.

There were more than the usual number of protests. A Reo was ruled out in the second event and a Ford declared the winner. A Stoddard-Dayton protested against a Jackson in the fifth event, and these and other protests are still under consideration. The summaries follow:

AMATEUR CHAMPIONSHIP.

1. Stearns; driver, W. F. Hart.....1:20
2. Reo; driver, Al. Engel.....1:39

WALTER WHITE IN WHITE STEAMER STARTING RECORD CLIMB.

M. J. ROSEBORO AND HENRY FORD IN PRIZE-WINNING FORD.

A. L. CAMPBELL BRINGING THE DARRACQ UP THE STIFF GRADE.

STOCK RUNABOUTS UNDER $850.

1. Reo; driver, McGinnis....1:36 1-5
2. Ford; driver, A. B. Manley....1:49 2-5

STOCK RUNABOUTS UNDER $1,500.

1. Jackson; driver, Robert Burman....1:38 3-5
2. Reo; driver, C. R. Thomas....1:44 4-5

STOCK TOURING CARS UNDER $1,500.

1. Reo; driver, C. R. Thomas....1:46 1-5
2. Reo; driver, Al. Engel....2:08 1-5

STOCK RUNABOUTS UNDER $2,000.

1. Jackson; driver, R. Burman....1:32 4-5
2. Stoddard-Dayton; E. C. Ireland....1:32 4-5

STOCK TOURING CARS UNDER $2,000.

1. Jackson; driver, Robert Burman....1:34 1-5
2. Reo; driver, McGinnis....1:37 7-10

STOCK RUNABOUTS UNDER $3,000.

1. Ford; driver, M. J. Roseboro....1:13 1-5
2. Stoddard-Dayton; driver, E. C. Ireland....1:32 1-5
3. Jackson; driver, R. Burman....1:37 3-10

STOCK TOURING CARS UNDER $3,000.

1. Ford; driver, J. Kubeck....1:21 7-10
2. White; driver, Scuife....1:27 9-10
3. Pope-Hartford; driver, J. Grady....1:29

STOCK RUNABOUTS UNDER $5,000.

1. Stearns; driver, F. Leland....1:03 3-10
2. Stearns; driver, W. F. Hart....1:13 1-5

STOCK TOURING CARS UNDER $5,000.

1. Stearns; driver, C. Schilpp....0:57 1-10
2. Pope-Toledo; driver, H. Lytle....0:58 9-10
3. Pope-Toledo; driver, R. Magoon....1:06 1-5

STOCK CARS OVER $5,000.

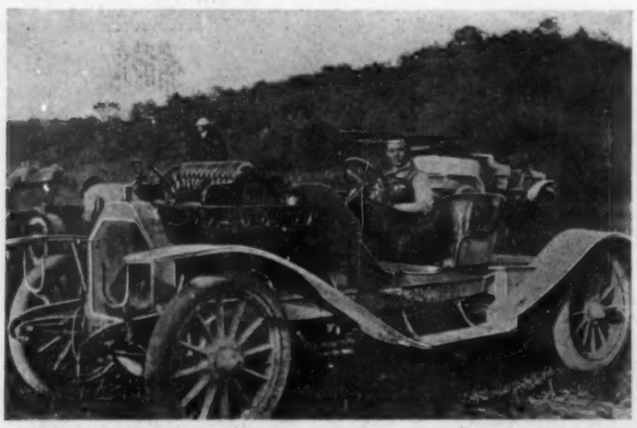
Stearns; driver, F. Leland....1:11 1-10

PISTON DISPLACEMENT, TWO CYLINDER.

1. Jackson; driver, R. Burman....2:33
2. Jackson; driver, C. D. Paxon....2:33

PISTON DISPLACEMENT, FOUR-CYLINDER.

1. Darracq; driver, A. L. Campbell....0:54 4-5
2. Stearns; driver, C. Schilpp....0:56
3. Pope-Hartford; driver, J. Grady....1:01 9-10
4. Pope-Hartford; driver, H. Lytle....1:03 3-5
5. Pope-Toledo; driver, R. Magoon....1:04



FRANK LELAND AND HIS STEARNS SIX THREE-EVENT WINNER.

6. Stoddard-Dayton; driver, A. Brooks....1:23
7. Stoddard-Dayton; driver, E. C. Ireland....1:33

Actual winners not yet decided by technical committee.

PISTON DISPLACEMENT, SIX-CYLINDER.

Stearns; driver, F. Leland....1:14

CARS FROM 851 TO 1,432 POUNDS.

1. Stoddard-Dayton; driver, A. Brooks....1:28 7-10
2. Reo; driver, J. McInnis....1:36 1-5

CARS FROM 1,432 TO 2,264 POUNDS.

1. White; driver, Walter White....0:47 2-5
2. Darracq; driver, A. L. Campbell....0:51
3. Pope-Hartford; driver, H. Lytle....0:59 3-5

FREE-FOR-ALL.

1. White; driver, Walter White....0:48 7-10
2. Stearns; driver, F. Leland....0:52 9-10
3. Stearns; driver, C. Schilpp....0:57 3-10

SPECIAL FOR ELECTRICS.

Baker; driver, Greunfeld....1:41 1-2

## JERSEY'S HILL CLIMB TO BE REVIVED.

Ever since that annual Jersey fixture in the shape of the Eagle Rock hill-climb became a thing of the past through force of circumstances, there has been a demand for an event of this kind. Old Eagle Rock was a terror at first, but soon it became child's play to the modern car, so that it was far easier to talk hill climb than it was to find a bump that would be worth tackling. "Senator" W. J .Morgan thinks he has found it, though, in Schooley's Mountain, which was recommended to him originally by Jefferson De Mont Thompson, of the A. A. A. racing board, as a most likely place. The grade is situated in Morris County, N. J., between Germany Valley and Hackettstown, and starts from the former village. It is 1 1-2 miles long, has three sharp turns in it, one of them a right angle, and is said to be the stiffest of its kind that Jersey can boast. At present it is liberally studded with water-breaks, but the inhabitants of both places are enthusiastic over the affair and have agreed to supply several carloads of crushed stone and clay to repair bad spots.

"S" TURN ON SCHOOLEY'S MOUNTAIN, MORRIS COUNTY, N. J.

The "Senator" recently made a trip to the scene of coming conflict with a party of autoists and it has been decided to hold "The National Hill Climb" there on July 4. The hill is reached from Newark via Elizabeth, Chatham, Madison, Morristown, Mendham and Chester on fine roads, and the scenery alone is said to be well worth the trip. Entry blanks for the climb are now out and can be had from W. J. Morgan, Bretton Hall, Eighty-fifty street and Broadway, New York. The classes are as follows:

1. Stock cars, $1,000 or under, gasoline power.
2. Stock touring cars, costing $1,500 and under, gasoline power.
3. Stock touring cars, costing $2,500 and under, gasoline power.
4. Stock touring cars, costing $3,500 and under, gasoline power.
5. Stock touring cars, costing $5,000 and under, gasoline power.
6. Free-for-all stock touring cars, all powers.
7. Stock touring runabouts, 30-horsepower and under, gasoline.
8. Stock touring runabouts, 30-horsepower and over, gasoline.
9. Stock touring cars, costing $2,500 to $4,000, all powers.

MOTORCYCLES—THREE CLASSES.

10. Engines having not over 500 3 cm. piston displacement.
11. Engines having not over 1,000 3 cm. piston displacement.
12. Free-for-all.

# Orphans' Day Observances in Leading Cities

ALL READY FOR THE START OF THE PARADE IN FRONT OF CHARLES M. SCHWAB'S RESIDENCE ON RIVERSIDE DRIVE.

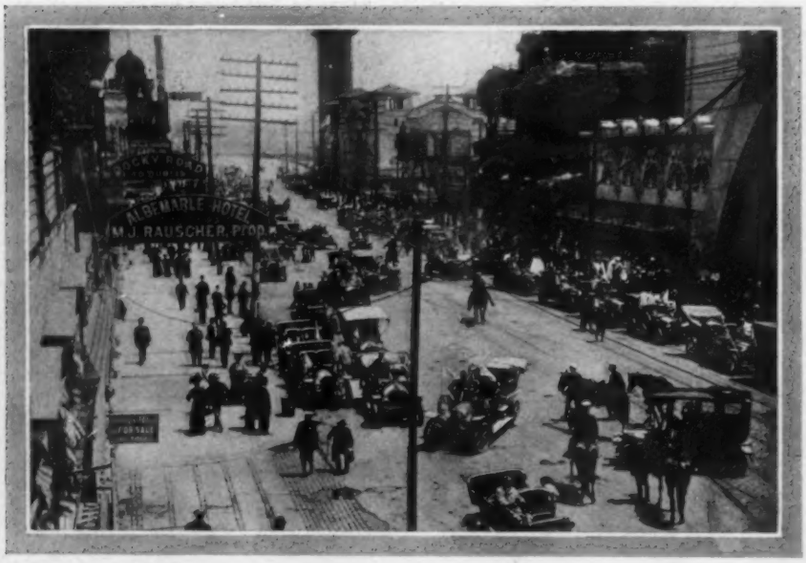
THERE was a lot more joy in the loud seething tide of the great city, Wednesday, June 12, than on ordinary days. A kindly thought of "Senator" W. J. Morgan, a couple of years ago, put into motion a sympathetic wave which has spread to distant cities of the States and is even being felt in the far-away capitals of Europe. It was the New York Motor Club on Manhattan Island and the Long Island Automobile Club across the stream which undertook, with contagious enthusiasm, the material organization of the joy-giving thought. If Chairman S. A. Miles, upon whose shoulders the burden of the preliminary work fell, and who deserves great credit for unselfish devotion to his task, felt heavy and tired at the end of the day, and if those who deprived themselves of their cars from morn till night felt footsore, it was all forgotten in the remembrance of the happy two thousand orphans who were brightened by a visit to Coney's wondrous charms.

CHAIRMAN MILES WAS ACTIVE.

Joy began at 8 o'clock in the vicinity of Seventy-third street and Riverside Drive—more correctly its public demonstration began there, for many an orphan cot had held a restless head unable to slumber at the thought of the morrow's feast. Chairman Miles established his headquarters at the Hotel Chatsworth and got into telephonic communication with each of the institutions supplying the youthful guests. An usher was dispatched to each "Home" to report to the starting point how the cars were filling and how arrangements were progressing at his point of observation. There were a number of eleventh-hour repentants, whose cars were dispatched to pick up a load at the points most needing help, according to information sent over the wire by the ushers. When the report came through: "All well, last car left," from the orphans' homes, the long procession was put into movement, a police patrol at its head, busy Chairman Miles and his committee in an advance-guard runabout, and a long string of 147 bedecked automobiles crowded with happy bits of humanity. Down Broadway to Brooklyn Bridge mounted police set a modest pace, while "General" Miles kept in touch with his moving army by means of an efficient motor-cycle corps which ran up and down the line of march with messages and reports. Over the bridge police motorcyclists replaced the horsemen; thus there was no scorching, no rush, just an orderly procession that moved along without a hitch. There was a puncture, but before the juvenile tears could flow a motor scout had run down the line and brought up one of the two empty reserve cars into which the youngsters were transferred. There was a lesson in the way the machines responded to the call for a six-miles limit for such a long distance, without any sign of overheating.

ANXIOUSLY AWAITING THE ARRIVAL OF THE AUTOS.

Franklin had the honor of being the most strongly represented in the run, Maxwell, Pierce, White, Packard and Locomobile following in numerical importance. Six commercial vehicles, two of them Packard delivery wagons, furnished by the Adams Express Company, one Logan, one Knox, an electric truck and a Fifth avenue 'bus attracted considerable attention with their loads of boisterous boys. A big Berliet with Arthur N. Jervis in charge, had a valuable consignment of 1,200 boxes of candy on board, the gift of J. A. McClurg. The car returned safely to New York, but never a bit of the candy again saw Broadway. Mrs. H. A. Lozier, who drove her own car with a lot of youngsters in it, was the only woman driver in the New York delegation. Samuel Brill, of the Automobile Club of America,




ORPHANS ARRIVE AT CONEY ISLAND IN FRONT OF DREAMLAND.

entered heartily into the spirit of the affair, and tied to the back of his automobile a sign reading, "Orphans' Day, To-Day Dreamland for Ours; To-night, Dreamland for Hours."

While the assembly was forming and proceeding oceanward from Riverside Drive a similar gathering was being formed over on Long Island, the number of orphans there being between seven and eight hundred. Some of them had a long journey, one party in particular coming from the Otillie Orphanage, at Jamaica, in ten cars. A Stevens-Duryea machine came all the way from Amityville. Mrs. A. M. Seaman and Mrs. Cuneo were the women drivers of the Long Island section.

New York's orphans drove direct to Dreamland, where a substantial meal was provided for them by the Harrolds Motor Company, of New York, and the George N. Pierce Company, of Buffalo. Naturally James A. McClurg's candy disappeared like ice under a summer sun. Brooklyn's fatherless youngsters were whirled along Surf avenue to Feltman's, where an army of waiters dispensed substantial meals, followed by ice cream and all sorts of dainties.

It was only necessary to be a wearer of the distinctive orphan badge to have all the gates of Coney Island swing open as if by magic. Airships, shooting the chutes, the Bay of Naples, miniature Switzerland, Bostock's wonderful animals, Kansas Cyclone, the Days of Forty-nine, and a host of others, were as free as the air and were enjoyed to the full, with repeat visits to those which delighted juvenility voted as extra fine.

"Al" Reeves came along and said, "Who wants ice cream?"

There was a fifty-throat yell of "Me! me! me!"

While the first batch was gobbling and chattering another child-lover "stood treat" to a second batch; a third did likewise, and a fourth followed suit. If any child remained ice-creamless it was because of a perverted taste.

It had to come to an end, as all good things do, and at five o'clock the little ones scrambled into their autos and were driven to the various institutions which shelter them. Not one accident and not a hitch. The arrangements would have been hard to improve upon.

"The car has not a scratch on it," said the enthusiastic owner of a new touring automobile. "I never saw a better behaved set of children in my life. They shall certainly have the machine next year."

Speaking of next year, the children will probably not go to Coney Island, but will be given a longer ride into the country and a wild romp in the fields. More nature and less ice cream may be the diet for the fatherless, hundreds of whom have never been out of the crowded city. Cars will not be lacking. Orphans' Day has proved itself such a success that no owner will want to keep his auto for his personal use on the children's fete day.

## HOW THE QUAKERS CELEBRATED.

PHILADELPHIA, June 17.—For a first attempt the Orphans' Day ride provided by the Quaker City Motor Club, seconded by the Germantown and Philadelphia clubs and the two local women's automobile organizations, was a very creditable performance. Unfortunately there was not enough of it, but 103 machines responding to the invitation of Chairman George H. Smith. At least 200 had been expected, and 250 had been hoped for.

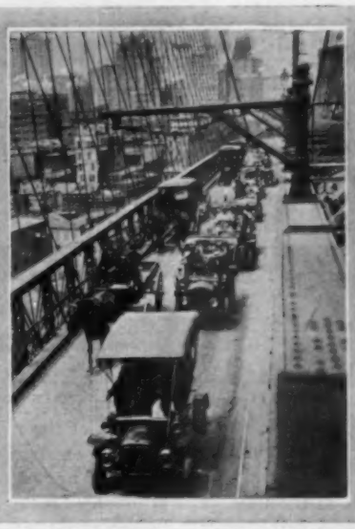
One feature of the affair which might have been improved upon was the failure to mass the cars either going to Willow Grove or on the return trip. Not that a parade would have added much to the pleasure of either guests or hosts; but the sight of more than a hundred automobile, whose owners had dropped business for a day to provide an outing for upward of eight hundred unfortunates, might have had a softening effect upon the thousands of local automobile owners who could not or would not assist.

As early as eight o'clock automobiles began to report to headquarters at the Hotel Majestic, and, after being supplied with numbers for their cars and from half a dozen to a dozen tags numbered to correspond, were dispatched immediately to the various institutions providing guests for the run. Each car was filled to its capacity, and the drivers, who had carte blanche to select their own route, only being required to report at Willow Grove at eleven o'clock, gave their living load as run-about a ride as time permitted.

The Rapid Transit Company of Philadelphia, which owns and operates Willow Grove, heartily seconded the automobilists' efforts by throwing open all the attractions of the place from 11 to 1 o'clock. A chorus of harsh "honk-honks" at 1:15 called

WHERE THE LITTLE STOMACHS WERE FILLED TO POINT OF BURSTING.

COMMITTEE CAR THAT LED THE WAY.



CROSSING THE BROOKLYN BRIDGE.

THE PRESS CAR CARRIED SWEETMEATS.

the little ones from the attractions of the grove to a bountiful luncheon, where second helpings were the rule, not the exception. By 3 o'clock all had been gathered again into the cars and were flying cityward.

## WORCESTER AUTOISTS GAVE HEARTY SUPPORT.

WORCESTER, Mass., June 17.—The Worcester Automobile Club voted early in April to have its third annual orphans' outing on the day named by the A. A. A. at National Orphans' Day.

Forty-seven cars carried 329 orphans from St. Anne's Orphanage, St. Gabriel's Orphanage, Temporary Home and Day Nursery, Neighborhood House and Memorial Hospital around the city for an hour, then took them to Lincoln Park, at Lake Quinsigamond, where President Francis P. Dewey, owner of the park; J. W. Gorman, manager of the theater; J. P. Irwin and George Gett, representing the amusements, gave a hearty welcome to the motorists and their charges. After an hour of the charms of the park the children were taken for another ride around the city and then to their homes. Many of the leading business men of the city drove their cars in the run, while others sent their machines in charge of chauffeurs. All but two of the garages of the city were represented.

## RAIN, BUT PLENTY OF FUN, AT CHICAGO.

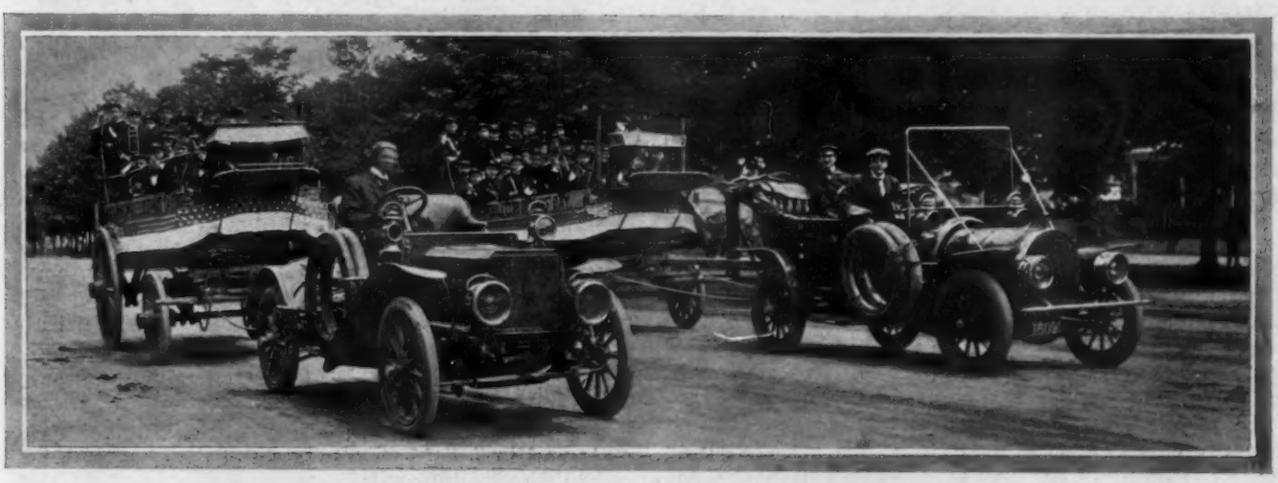
CHICAGO, June 17.—It rained at Chicago on National Orphans' Day, but Chicago's thousand youngsters, in 125 automobiles, did not mind that. Three associations looked after the interests of the fatherless—the Chicago Automobile Club, the Chicago Motor Club and the Chicago Trade Automobile Association. Starting from the Auditorium Hotel early in the afternoon, the excited youngsters had the time of their lives in the run to White City and Sans Souci Park, where the management had made special arrangements for their entertainment. Frank L. Albert turned the place over to them, and for a few hours the mimic steamer, shooting the chutes, the ice cream and the candy stalls had a strenuous life. Just as the sun came out for the first time in the day the youthful party was again embarked on the machines and trundled back to their homes. Alderman F. W. Taylor, from the Twenty-first Ward, acted as grand marshal of the day. In the eyes of the majority the most important official was Commisioner-General Richard Bacon, Jr., who appeared with a large auto truck piled high with crates of crackerjack and peanuts.

## GRAND RAPIDS SUCCESSFULLY CELEBRATES.

GRAND RAPIDS, Mich., June 17.—Orphans' Day in Grand Rapids was a splendid success, in spite of the fact that when the machines left the asylums it was raining hard. Fifty big machines, enough to carry comfortably the 170 orphans of the city, were loaded by two o'clock, and the eight-mile run to the Cascade clubhouse was made without mishap. The children were there given the freedom of the clubhouse, had games by the river, and were provided with a bountiful repast before their return. The committee in charge consisted of Dr. Perry Schurtz, Orin Stair and Dr. J. E. Meengs.

## BALTIMORE HAS 175 CARS IN LINE.

BALTIMORE, June 17.—The orphans of the Monumental City were the guests of the Automobile Club of Maryland on Orphans' Day, when 175 cars were used for their entertainment. Refreshments were furnished at Electric Park.



HOW THE LONG ISLANDERS TRANSPORTED THE ORPHAN BOYS' BAND OF SIXTY-FOUR PIECES.

# PREPARATIONS COMPLETE FOR THE GRAND PRIX

PARIS, June 12.—With but twenty days separating us from the Grand Prix, for that much-advertised event is to be run on the Dieppe circuit on July 2, the Sporting Commission has now got down to details of organization. Racing cars have not been seen on the circuit since the beginning of the month, and those tourists who wish to make acquaintance with the fast course have their speed ruthlessly cut down to thirty kilometers an hour by vigilant gendarmes.

Salting the course was not considered sufficiently reliable to keep down dust, and the more costly but more reliable method of tarring has again been resorted to. The work is now terminated, not without a little criticism, Szisz in particular being of the opinion that it might be more thoroughly done on the turns.

It will be promptly at six o'clock that Lancia, who has drawn No. 1, will be sent away, the others following at intervals of one minute, whether a car is passing the grand stands at the time or not. Being on the loop road, there is no danger of a new starter coming into collision with a machine finishing its first round. Arrangements are completed for placing soldiers around the course; 4,000 men from line regiments, 400 horsemen, 300 foot gendarmes, and 300 mounted gendarmes—a total of 5,000 troops—will be distributed around the circuit. In open portions of the country there will be a soldier every hundred yards on each side of the road, with much stronger forces in the villages and on the turns. Sixty commissaires, appointed by the A. C. F., will also be spread round the course to observe the enforcement of the rules. At least twelve temporary bridges and tunnels will be specially constructed to unite the inside with the outside of the circuit before and during the race.

The nine Sporting Commission racers to compete among themselves during the Grand Prix contest, will be started at nine o'clock and at intervals of five minutes. Not until five o'clock in the evening will the triangular course be again open to the public; even then no vehicle may travel, except in the direction in which the race has been run. At six P. M. the course will be entirely free to all comers.

There is every possibility of the Dieppe course being adopted as a permanent course for the races held by the Automobile Club of France. The question will be discussed at the next meeting of the committee. Under the present system of a new circuit every season the club is led to an enormous amount of expense, for, no matter how good the roads are, there is a certain amount of work to be done in building temporary bridges, barriers, grand stands, and widening and improving the road where necessary. Last year $11,000 were lost on the Grand Prix, and the Gordon Bennett race in Auvergne was far from being a profitable affair.

Members of the Technical Commission of the A. C. F. have been paying particular attention to the effect of fast cars on the road surface, both on straight stretches and on the turns. A close examination of the course will be made the day before and the day after the race in order to obtain accurate information on the effects of tires at high speeds. Information thus gained will be particularly valuable to the parliamentary commission concerned with automobile regulations.

Though no official announcement has yet been made, it is generally thought that Bayard-Clément will not be represented in the Grand Prix, in consequence of the unfortunate death of Albert Clément. Darracq, who for a time appeared likely to be an absentee also, will be in full force. The accident which cost the life of Marius Pin, at Rambouillet a few days ago, only caused slight damage to the racing machine, and M. Hériot, the owner, has offered it to Rigal, who has accepted, to drive it in the race. In accepting the offer Rigal declared that he would give half his engagement fee and half of whatever prize money he gains on the race to the widow and children of Marius Pin. Caillois and Demogeot are the appointed drivers of the two other Darracqs, though there is still the possibility of a change being made in the selection of Demogeot. With but few exceptions all the competitors for the Grand Prix, some of whom have been round the course thirty or forty times, are loud in their praise of the circuit. Jenatzy predicts an average of from 63 to 65 miles an hour, which opinion is generally shared.

## RIVES BUSY ON NEXT FRENCH SHOW.

PARIS, June 12.—Gustave Rives, the master mind of the Paris Automobile Salon, has promised an interesting retrospective exhibition at the next show in the Grand Palais. The time is particularly opportune, for next year's show is the tenth in an uninterrupted line of succession, and will in consequence be particularly brilliant. Last year a retrospective cycle exhibition formed one of the attractions of the Salon, but the coming one, devoted to motors, boats and flying machines, is certain to surpass it in interest. Among the important relics already secured are the first tricycle and the first voiturette produced from the then tiny De Dion factory, the Panhard machine which won the Paris-Bordeaux race in 1895, Jenatzy's "Jamais Contente," a Renault voiturette victorious in the Paris-Amsterdam-Paris of 1898, racers having participated in the early road races of Paris-Toulon, Paris-Madrid and Paris-Berlin, in addition to a number of racing machines victorious in international contests. In addition to the racers will be a series of touring cars showing the progress made from the earliest attempts to the present day. Motor boats and flying machines will be represented in the same way.

An elegance competition, to be held during the show, will prove as interesting to private users as to manufacturers. Its object is to develop the production of comfortable, elegant town vehicles, free from vibration, smoke and noise, graceful in design, comfortable for travel and artistic in finish. Elegant town vehicles have been quite a feature of the Paris automobile industry during the past two or three years, engineers and body builders having combined to produce the highest grade of town vehicle, having all the *chic* of a costly horse turnout, with none of its shortcomings.

## RUSSIA HOLDS A ROAD RACE AND A SHOW.

ST. PETERSBURG, June 10.—Twenty-seven machines—heavy racers, light cars and motorcycles, started on the 434-mile road race from Moscow to St. Petersburg, the first of its kind held in the country, and which was one of the outside attractions of the automobile salon held with so much success and enthusiasm in the Manege Michel. Starting from a point two miles outside Moscow, the first machine was sent away at 2 A.M., the others following at intervals of two minutes. A large crowd was present at the start, recalling somewhat the condition which governed the start of the ill-famed Paris-Madrid race. Fortunately, however, there were no accidents. For 200 kilometers the road was guarded by Cossacks, and gasoline and tire stations were placed along the entire course at intervals. The first half of the distance was over excellent roads, but the latter half was on tracks that caused considerable difficulty to nearly all the machines. Duray's average of 46.4 miles an hour and the 30-horsepower Charron's average of 37 miles an hour are good performances under such conditions. The following is the classified result:

**Lorraine-Dietrich, Duray, 9:22:0 (average, 46.4 miles an hour).**
**C. G. V., Champoiseau, 12:53:0 (average, 37 miles an hour).**
**Fiat, Folkin, first in second class, 14:18:0.**
**Mors, London, 14:20:0.**
**Brasier, Schwartz, first in tourist class, 14:28:0.**
**Argus, Menoff, 15:7:0.**
**Darracq, Jemlitchka, 15:32:0.**

# EUROPEAN RAILWAY MOTOR CARS*

By B. D. GRAY, American Locomotive Works.

As a result of continued and consistent experimentation, covering a period of four years or more, conducted by numerous English and Continental railways, the self-propelled railway car has been brought to such a degree of refinement that it has become an important and established factor in the transportation of passengers and light goods traffic. While its inception dates back many years—experiments along this line having been made as early as 1873—the successful development of the self-contained car is quite recent. Owing partly to the crudity of early designs, but largely to under-estimation of its possibilities and lack of appreciation of the necessity for frequent and rapid train service, and because the demands of the traveling public were not nearly so exacting as at present, the early experiments were probably premature; but the phenomenal growth of our large cities, the grouping of commercial interests, and the ever-present desire for home comforts, have removed residence districts from business centres and brought about the necessity for efficient suburban and interurban transportation facilities. Greater demands upon business men's time have likewise contributed to the necessity for rapid transit. The influence of metropolitan activity is felt in the smaller cities and provincial towns, and extends even to the most remote country districts.

In the United States electricity has been widely adopted as a motive power, and has met with marked success the demands for quick and reliable service. Electrification of existing steam roads and the building of new electric lines have not been taken up so generally in Europe, and it is therefore only natural that the engineers of those raiways should look for the solution of the frequent service problem in a vehicle which might be adapted to existing conditions with no expenditure for equipment other than that for the vehicle itself. This condition of affairs probably influenced recent builders of motor cars in selecting steam as a motive power, although its predominance at the present time is due chiefly to its low fuel cost and great flexibility.

Numerous English and Continental railway companies have permanently established motor car service on their lines in different localities, with marked success. The practicability of the self-contained car for certain kinds of service can no longer be doubted, nor is its field so limited as might be generally supposed. One may see such cars operating on unimportant branch lines as feeders to trunk line trains; on main lines through thickly populated districts, carrying passengers and luggage to and from the more important towns served by express trains; on suburban lines in competition with both trolley cars and steam trains, on an entire railway system, where there is no other means of transportation except for heavy freight.

### What the Adoption of the System Means.

Its adoption permits better service, with greater frequency, at lower cost of operation, than is possible with the ordinary steam train, comprising a locomotive and one or more passenger coaches or combination cars, the lower operating cost being due chiefly to decreased fuel consumption and a reduction in the train crew. Motor car equipment is cheaper to install than ordinary train equipment, therefore fixed charges on the investment are correspondingly less. Maintenance charges on rolling stock are about the same in both cases, but track maintenance is less where motor cars are used because of decreased weight.

As compared with electric railways for interurban service, where current is supplied from a central station, the relative economy depends chiefly upon the frequency of the service. Taking into account the cost of equipment, installation, operation, current losses, etc., it is fair to assume that where cars are to be run at thirty-minute intervals or less the electric railway is the most economical, but where car or train intervals are greater than thirty minutes, the balance is in favor of the self-propelled car.

The London & Southwestern Railway was one of the pioneers in the movement for self-contained cars, and in 1903 placed a steam car on their line between Fratton and South Sea. This car was equipped with small cylinders and vertical boiler, and, while not capable of high speed or quick acceleration, the results obtained were satisfactory from the standpoint of economy of operation, and probably encouraged more than anything else other railways to take up this problem. This car has a total length of fifty feet and seats forty passengers. The cylinders are inclined, driving the leading pair of wheels only.

One of the most satisfactory cars in operation abroad at the present time is the one developed by Mr. Churchward, chief engineer of the Great Western Railway of England. In the neighborhood of sixty of these cars are in service on various parts of the Great Western system, and others are in course of construction. They combine to a remarkable degree many of those qualities essential to success—large seating capacity with only moderate weight, flexibility of control, reasonable speed and acceleration, reliability, low maintenance and fair operating costs. The boiler is of the vertical fire-tube type, with no superheater, supported directly on the frame of the power truck, and serving as a centre pin by transmitting the driving effort to the sills of the car through flat springs. It is enclosed within a compartment of the car body about fourteen feet long, which contains the coal bunkers, operating levers, etc. As the car is arranged to run in both directions and is controlled from both ends, a stoker is employed in addition to the driver. Aside from attending to the fire, it is his duty to regulate the cut-off when the driver is at the other end of the car, as only brake and throttle connections are provided there. The motor consists of two single expansion cylinders 12x16 inches, coupled direct to the rear driving wheels, which in turn are coupled to the front drivers. Air brakes are provided, the usual form of steam-actuated automatic pumps being used to supply the air. The water supply is carried in tanks hung beneath the car body midway between the trucks.

As an indication of the reliability and commercial success of these cars, the following instance of service conditions may be cited: Two motor cars and four or five trailers are used on the main line of the Great Western between Chalford and Stonehouse, a distance of about seven miles. The railway at this point runs through what is known as the Stroud Valley, a thickly populated section comprising in all about 40,000 inhabitants in the nearby towns and outlying districts. The motor car schedule provides on an average fourteen round trips per day (a total of about 200 miles), so arranged as to run these cars between through trains, both passenger and freight. There are ten stops in the seven miles, and the running time each way is from twenty-three to twenty-five minutes.

These cars are capable of a maximum speed of fifty-five miles an hour, although the average running speed is thirty to thirty-five miles an hour. Their maximum acceleration is about one mile per hour per second.

The original cost of the type of motor car shown in Fig. 1 is about $9,000, and the cost of operation, aside from the guard's pay, is 13 cents per car or train mile, including trailers, for the service above referred to, the coal consumption being about 20 pounds per train mile.

### An English Gasoline-Electric.

About three years ago the North-Eastern Railway of England put into service two "petrol-electric" cars on a short line running out from Scarborough. Owing to the fact that traffic on this line

* Extract from paper presented at the Indianapolis meeting of the American Society of Mechanical Engineers.

is heavy during the summer season only, these cars are laid up during the winter, and have, therefore, not been in continuous service. One gallon of gasoline to 3½ car miles is claimed for them, but the maintenance charges must necessarily be high.

The power plant consists of a four-cylinder horizontal opposed Wolsley engine, 8½x10 inches, 85 b. h. p. at 420 r. p. m., direct connected to a compound-wound separately-excited generator of 55 kilowatt capacity, which furnishes current to two 50-horsepower electric motors of the ordinary railway type, on the leading truck. The exciter, of 3.75 kilowatt capacity, is mounted above the main generator and driven by a belt from the flywheel of the engine. In addition to exciting the fields of the generator, it is used to charge a storage battery, which supplies current for lighting the car, starting the generator and gasoline engine, and for a small automatic compressor motor, which supplies air for the whistle. The battery and compressor outfit are suspended beneath the car body. The engine and main generator are very cumbersome and heavy, and occupy practically one-third of the total length of the car. The total weight, including 60 gallons of gasoline and about 100 gallons of cooling water, is 35 tons, of which 22 tons are carried on the power truck.

Radiating pipes located above the the engine room, and supplied with air by a horizontal fan, in addition to that due to the motion of the car, serve to cool the jacket water. For extremely warm weather, an additional coil extending along the roof is provided and pipes are also arranged inside the car to be used for heating in cold weather. Electric brakes are used, the current being supplied by the motors acting as generators. Controlling apparatus is provided at both ends of the car, and only two men are required to operate—motorman and guard. The wages paid are about 7 and 6 shillings per day, respectively.

The complications of this system, the multiplicity of parts, and the excessive weight give a rather unfavorable impression. The combined efficiencies of the generator and motors must of necessity be low, and their use can only be reconciled with the extreme flexibility of transmission necessitated by a large unwieldy gasoline motor. As this particular type of car has not been perpetuated by the original builders and users, it may be safe to assume that it is not entirely satisfactory. It is the author's opinion that its indifferent success is due to the enormous size and weight of the power plant throughout, as a number of cars embodying practically the same principles, but of much lighter construction, have been in successful operation in Hungary during the past three years.

### Some Types on French Railways.

Numerous experiments have been made on the different French railways, including the Paris-Orleans; Paris, Lyons & Mediterranean; Northern; Western and the State railways, with various types of cars, but the most successful at the present time, and the one being almost universally adopted, is that of Purrey, of Bordeaux, and although differing in minor structural details, the power plants of the Purrey cars as built by the different railways are practically the same. There is also a slight variation in the size, weight, and arrangement of cars to best meet the requirements of the different roads, but that of the Paris-Orleans Railway is fairly representative of all the cars used in France.

The car body has a total length of about 60 feet, and seats 30 third-class passengers in three compartments, and 25 first-class passengers in 2 1-2 compartments. In addition to this, there is a baggage compartment at the forward end 11 feet 6 inches long and extending the entire width of the car, 112 inches. The forward end is pivoted on a power truck, the rear end being carried upon a single axle. The power truck, which carries the boiler, motor, fuel, water, etc., has two axles 126 inches apart, the rear wheels only being used for driving. The weight of this truck is 14 1-2 tons, of which about 7 tons is on the rear axle. The total weight of the car complete is about 35 tons.

The motor is four-cylinder tandem compound, high pressure 6 5-16 inches diameter, low pressure 8 11-16 inches diameter, and the stroke 8 7-8 inches, rated at 260 horsepower at 650 revolutions per minute. A bypass valve is provided to admit high pressure steam to the low pressure cylinders for quick acceleration and unusually heavy pulling. Ordinary D type valves are used, operated through Stephenson link motion. In this design, the motor is attached horizontally to the frame of the car, and its power transmitted to the rear axle by two toothed chains of special construction, similar to the Renold and Morse silent type. All the working parts are enclosed in a dustproof case, and lubricated principally by splash. The motor is accessible through a trap door in the floor of the baggage compartment, and any ordinary adjustments can be made from this point. A door is also provided opening into the baggage compartment, through which the boiler tubes may be inspected, thus rendering the most delicate parts of the mechanism readily accessible. Should it be necessary to overhaul the boiler or motor, the power truck may be removed from the body of the car in 20 minutes and another substituted in its place. Westinghouse air brakes and hand brakes are used.

The Paris-Orleans road have 10 cars and 12 power trucks, and have been able to keep the 10 cars in service practically all the time by having the two extra trucks in reserve. As a rule, one or two trailers are attached to these motor cars, the average weight of the train being 50 tons. The fuel consumption for such a train is about 21 pounds of coke per mile.

This car is arranged to run in one direction only, except for backing up, and the crew consists of only the driver and one man in the baggage compartment, tickets being taken at the stations by inspectors. It is geared rather high, and is capable of running at a speed of about fifty-six miles per hour. Its acceleration, however, is not so good as that of the Great Western car.

The Orleans road has instituted a motor car service between Bourges and Saincaize, a distance of 59 kilometers (37 miles), the run being made in 70 minutes, including eight stops. Sufficient fuel and water capacity are provided for a run of 50 kilometers.

The Purrey system has been used for a number of years on different tramway lines in the city of Paris, but for this service it has been found that the single expansion engine gives better results than the compound, and also that there is no advantage in having a variable cut-off, owing to the frequency of the stops, the speed of the motor being controlled entirely by the throttle valve, no adjustments being necessary for starting.

### Arad Csanadar Railway of Hungary.

One of the most interesting examples of successful operation of railway motor cars on a large scale is that of the Arad Csanadar Railway of Hungary. Three years ago a Ganz steam car was put into service on this road in an experimental way, and the results were so satisfactory that the management decided to replace their locomotive and train service, for passenger and light goods traffic, with the self-propelled car, and have gradually added to their motor car equipment until now they have a total of 37 cars of which 4 are Ganz steam cars 35 horsepower of the de Dion system; 22 are gasoline-electric 30-35 horsepower of the de Dion Bouton system, constructed by Johann Weitzer; 10 are gasoline-electric 70 horsepower of the de Dion Bouton system; one is gasoline 40 horsepower (German Daimler).

The total length of this railway is about 400 kilometers, single track, running for the most part through a sparsely populated agricultural district, where conditions are conducive to economical operations, as the average Hungarian peasant is not very fastidious nor exacting in the matter of luxuriously furnished cars or rapid transportation. Their cars are of very light construction, and, being run at low speed, require small power plants in which the fuel consumption is comparatively low. Only the heavy freight traffic is handled by steam locomotives, and in 1906 the motor cars covered a total of about 1,000,000 miles, in most cases hauling from one to four trailers.

The improved service offered by the motor car has stimulated traffic in that section to such an extent that within the past two

years it has doubled. One of the most remarkable features in connection with the success of this railway is the extremely low fares, which average about 1-3 cent per mile, and yet the road pays 8 1-2 per cent. on the investment of $6,500,000 after paying 19 per cent. of the total receipts to the government as a tax.

The larger gasoline-electric cars used by this railway are equipped with a 70-horsepower gasoline motor direct connected to a 45-kilowatt generator, which supplies current to two ordinary railway type motors attached to the two axles. The usual series parallel controller is provided for starting. After the car is once under way, its speed is controlled almost entirely by the throttle of the gas engine. At the right of the electric controller are two smaller levers, one of which connects with the throttle, and the other with the spark advance mechanism. In addition to these, there is a small rheostat provided within easy reach of the operator, which serves to vary the field strength of the generator, and thus gives an additional means for controlling the car during the acceleration period. Controlling apparatus is provided at only one end of the car, as it is intended to run in only one direction except for shunting. Bocker air brakes and hand brakes are provided, air being supplied by a small compressor driven from the outer end of the armature shaft. An air whistle is used. Acetylene gas is used for lighting. Coils are provided along the sides of the car for heating, the jacket water from the motor being used for this purpose. In warm weather the jacket water is passed through a coil of tubes on the roof at the forward end where it is exposed to the air.

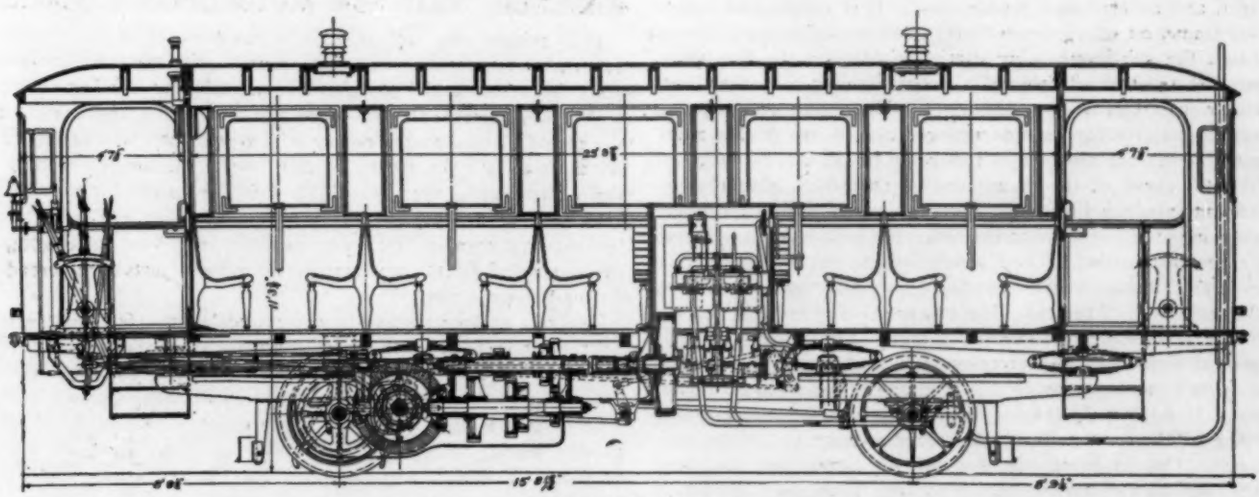
The space occupied by the power plant is considerably less in proportion to the length of the car than that of the Great Eastern, although the systems are practically identical in principle. Its acceleration is very good indeed, and its maximum speed is about 35 miles per hour without trailer, and with two trailers about 25 miles per hour. More than two trailers are never used with the 70-horsepower car, as it is used for express service, but the smaller cars, equipped with 35-horsepower motors which run very much slower, frequently haul as many as four trailers. It is claimed by the engineers of this road that 65 per cent. of the motor's power is delivered at the wheels. In general very satisfactory results are obtained and the car is admirably adapted to their conditions.

The Ganz cars are manufactured in three sizes, 35, 50 and 80 horsepower. The general arrangement is the same in all three, the boiler being placed in a compartment at the forward end of the car, together with fuel bunker, feed pumps, and controlling apparatus. The motor is placed horizontally on the leading truck, and drives the rear axle through spur gears. It is supported in the usual electric railway motor style, one end being swiveled about the axle and the other supported elastically from the truck frame. Control is provided at only one end, and only one man is required to operate the car. The 35-horsepower car has a seating capacity of 22 first-class and 12 second-class passengers. Its over all length is about 35 feet. A speed of 35 miles per hour is claimed for this car with a fuel consumption of 5.3 to 7.2 pounds of coke per mile. The same consumption is claimed with trailers weighing from 35 to 40 tons at a speed of 12 1-2 miles per hour.

### Details of the Motor.

Ganz motors are two-cylinder cross compound, the one used with the 35-horsepower boiler having cylinder diameters of 4 9-16 inches and 6 11-16 inches and common stroke of 4 3-4 inches. Two steam operated feed pumps are provided, one being held in reserve.

The 80-horsepower car has a total length of 46 feet, seats 47 passengers, weighs 23 tons, and is capable of climbing a 1.6 per cent. grade with two trailers weighing 12 tons each, at a speed of 25 miles per hour. One peculiar feature of the Ganz system is the double gear reduction between the motor and the axle. Two spur gears are mounted loose on the crankshaft between the two cranks and meshing with gears keyed to the axle. A jaw clutch positively driven is provided between the driving gears, and so arranged as to engage either one or the other when moved along the shaft. The ratio of reduction is about 2 to 1. As a rule, the low gear is used when the trailers are attached and for heavy grades.



SECTIONAL ELEVATION OF GERMAN DAIMLER GASOLINE CAR THAT IS MUCH USED ON THE SMALLER GERMAN RAILWAYS.

The Serpollet system differs from the Purrey and Ganz types chiefly in that the boiler is of the flash type, and kerosene is generally used as fuel. A very high degree of superheat is obtained, reaching even 1,200 degrees F., which, together with the incrustation attending the use of more or less impure water is conducive to the burning of tubes. The experience of the Paris, Lyons and Mediterranean Railway with this type of car has been rather unsatisfactory, because of tube troubles, and the Purrey car is now being adopted in its place.

The Komarek car, manufactured by F. X. Komarek, Vienna, and used to some extent by the Austrian State railways and several of its branches, is one of the most rational in design of all in use abroad. Its builders may have erred slightly on the side of weight, but it shows remarkable economy and unusual freedom from repairs and troubles of all kinds.

This car is capable of running at a speed of 25 miles per hour on a level while hauling trailers comprising a total of 50 tons. The operating cost is said to be about 5 cents per train mile exclusive of the guard's pay, with coal costing $3.25 per ton.

In general, the arrangement of the four axle car is similar to

the Purrey with the forward end of the body supported on the power truck. Other types with two and three axles have the boiler in a compartment at the forward end of the car body, supported by the main body frame. The motor is practically a small cross compound locomotive with outside cylinders, driving on one pair of wheels only. A vertical water tube boiler of special construction is used. To provide for expansion, the inner shell is corrugated, and the tubes are accessible for cleaning and renewal through plugs and manholes in the outer shell. A superheater coil is placed in the upper part of the furnace, and heated by the exhaust gases, the degree of superheat averaging about 300 degrees F.

### German Daimler Gasoline Car.

This type of car has been used in considerable numbers on some of the smaller German railways, notably the Württemburg State Railway and on the Swiss Federal Railway. It is a comparatively small car having a total length of 33 feet with a seating capacity of 36. It is equipped with a 30-horsepower Daimler four cylinder (5 1-4 by 6 3-4 inch) engine of the heavy slow speed type, its normal speed being in the neighborhood of 550 revolutions per minute. The motor is located practically in the middle of the car, projecting upward through the floor to a considerable height, and inclosed by a wooden box. It is rigidly attached to a sub-frame, on which the car body is supported by eight elliptic springs, the sub-frame being carried rigidly on the two axles. Power is transmitted from the motor through a leather-faced cone friction clutch, and through a sliding gear transmission, arranged to give four speeds and reverse, to one of the axles. Control levers are provided at either end of the car, by means of which the speed of the motor may be controlled, gear changes made, and also the direction of motion reversed. When the driver leaves one platform to go to the other, the gear levers are locked in a neutral position. Their connections to the gear case then serve as fulcrums for the operating levers and their connections at the other end of the car. The transmission is extremely heavy and the gears somewhat difficult to shift. They are not entirely protected from dust and therefore subject to rapid wear. The cone clutch requires considerable attention to secure smooth operation. If neglected, it takes hold with such brusqueness that jerking of the car results, to the extreme discomfort of the passengers. One of these cars has been in service on the Arad Csanadar Railway but has been practically abandoned because of the clutch and gear troubles.

Several years ago the Daimler Motor Company, of Coventry, England, built a number of small railway cars of the straight gasoline type, equipped with two 30-horsepower motors, carried on a sub-frame between the axles. They were placed at diagonally opposite corners of the frame, and a sliding gear transmission provided, centrally located and so arranged that either or both motors could drive through it, and thence through bevel gearing to the two axles. These cars have not been satisfactory because of clutch and gear troubles, and because they were rather expensive to operate, the fuel cost being high. The usual friction clutches interposed between the motors and transmission permitted the use of either one of the motors independently of the other, a feature which may possess merit in minimizing fuel consumption, and in being able to proceed with one motor if the other for any reason becomes inoperative. Two axle cars, such as the German and English Daimler, are not applicable to all kinds of service because of the long wheelbase, which is 15 feet 9 inches in the case of the former and 15 feet in the latter.

### Some Remarks in Conclusion.

The author's impressions of the railway motor car situation abroad, gained from personal observation of the leading types herein described in operation, and from personal interviews with railway officials and others more or less directly interested, may be summed up as follows:

The field of the railway motor car is very broad indeed. It has always demonstrated its superiority over the ordinary steam train, in making possible more frequent service at lower operating cost, as a feeder to express trains, on branch and main lines, in either very thickly or very sparsely populated districts. It has successfully competed with electric cars of both trolley and storage battery types, in suburban and interurban service. In the case of the Arad Csanadar Railway, it has replaced steam trains on the entire system except for heavy freight. Further refinement is possible and may be expected, which will extend its field of usefulness. Steam, as a motive power in cars of 80 horsepower or over possesses the greatest number of advantages, among which may be named flexibility, reliability and economical operation. First cost is also in favor of the steam car, and likewise to a slight extent maintenance charges.

For cars of less than 80 horsepower the internal combustion motor shows lower fuel cost than the steam car of like power. Present well-known forms of gear transmission with friction clutches which are entirely successful on gasoline automobiles are not suitable for heavy cars because of their inelasticity and the enormous difference in inertia of weights dealt with.

Electric transmission possesses the required flexibility and seems best adapted for the purpose.

## A BANNER YEAR FOR AUTOMOBILE EXPORTS.

It is evident that 1907 is to be a record-breaking year in the exports of automobiles and that its total will top the $5,000,000 mark by a substantial margin, for according to the last report of the Department of Commerce and Labor, the aggregate for the period of ten months ending with April, 1907, was $4,104,737. As the total for the month of April alone represented $686,144, there seems to be every possibility that the figures for the fiscal year will be nearer the six million mark than the five. No less than 397 complete cars were exported, of a value of $638,014, the balance of $48,130 representing the value of parts sent abroad during the same month.

The rate of growth may be appreciated by the fact that these figures represent an increase of more than sixty per cent. over the total for April a year ago, which was but $408,383, while some idea of the manner in which the exports have grown from year to year may be had from the figures of the periods of ten months ending with April in the past three years, which were $1,876,063, $2,473,207 and $4,104,737 for 1905, 1906 and 1907, respectively.

Just where all these cars and the vast quantities of parts find a ready market is interestingly revealed by the detailed table, which moreover brings to light the startling fact that the bulk of the increase in American exports is to be found in the figures represented by the takings of those countries which are automobile producers themselves, and as such, strenuous competitors for the world's trade. For instance, both England and France show increases of considerably more than 100 per cent., and the difference is not merely one of percentages, as the amounts are substantial, as will be seen upon reference to the table. The same is true of other Europe, while both Germany and Italy show proportionately great increases.

The detailed table follows:

| | April | | Ten Mos. Ending April | |
|---|---|---|---|---|
| | 1906 | 1907 | 1906 | 1907 |
| Automobiles, and parts of— | | | | |
| Automobiles | 408,383 | $638,014 | $2,437,207 | $3,603,298 |
| Parts of | | 48,130 | | 501,439 |
| Exported to— | | | | |
| United Kingdom | 74,746 | 174,277 | 616,177 | 983,921 |
| France | 31,375 | 81,230 | 170,601 | 358,648 |
| Germany | 11,517 | 17,048 | 57,259 | 102,556 |
| Italy | 55,960 | 79,392 | 227,588 | 205,519 |
| Other Europe | 20,774 | 50,658 | 123,233 | 216,918 |
| British North America | 82,133 | 174,448 | 435,850 | 870,332 |
| Mexico | 91,881 | 64,409 | 293,002 | 692,652 |
| West Indies and Bermuda | 4,252 | 11,752 | 224,676 | 183,552 |
| South America | 9,748 | 11,214 | 61,780 | 170,270 |
| British East Indies | 2,313 | 7,003 | 31,046 | 33,086 |
| British Australasia | 18,504 | 3,511 | 148,124 | 189,454 |
| Other Asia and Oceania | 3,329 | 7,264 | 44,096 | 76,976 |
| Africa | 831 | ..... | 26,925 | 8,673 |
| Other countries | 970 | 3,938 | 12,850 | 12,180 |
| Total automobiles, and parts of | $408,383 | $686,144 | $2,473,207 | $4,104,737 |

# GENERAL POINTERS FOR THE NOVICE OWNER

By CHARLES B. HAYWARD.

WEATHER conditions have been responsible for delaying it considerably, but it seems to be about due now if ever—that annual deluge of advice that is hurled at the head of the unoffending beginner. It is a hardy annual that does duty as a space filler year after year, usually appearing in much the same form, so that each succeeding crop of *don'ts* and *musts* are as like as grains of wheat from the same field, but the demand continues strong, nevertheless, which is easily accounted for by the largely increasing army of beginners that comes on the field each spring, anxious to devour every available bit of information to be had. The man to whom, the year previous, the technical pages of an automobile weekly were so much Sanscrit, is frequently the individual who develops such an amazing appetite for matters rudimentary concerning the handling and maintenance of his car that the demand for articles of one syllable, so to speak, is readily explained.

Naturally enough, about the first thing the proud owner wishes to know and familiarize himself with is the matter of breakdowns. Pride of possession and the smoothness of its performance at first banishes all thought of such a thing as the possibility of his dream of a car ever going wrong, but a little second thought as well as the sight of others in trouble soon brings with it a realization of the fact that automobile troubles fall on the just and unjust alike. Where to begin is really the question of greatest moment, for there are apparently so many things to learn that it is somewhat difficult to know just which line of investigation to take up as a starter. A pseudo-authority has calculated that there are thirty different things that can go wrong with a gasoline engine, and he took the trouble to tabulate them carefully for future reference, at the same time recommending to all who would learn to pay heed and, beginning at the top of the list, wade through the thirty, if trouble were to be speedily found. After a little experience, the novice will doubtless come to the conclusion that there are more apt to be three hundred things than thirty to go wrong about the engine alone, not to mention sundry other parts of the car, but he will hardly find it necessary to tabulate them nor try to give them a relative order of precedence, though such they have.

### Care in Driving the First Requisite.

Starting in with a brand new car just as it comes from the makers, whose testing crews have put it in fine fettle, there is little need to worry about matters going wrong at first. The factor of safety where reliability is concerned, has been brought to a very high point in the modern automobile so that his first care should be to master the operation of the car. Volumes have been written on the subject and doubtless others are in preparation at the moment and they will always continue to come, so that it would seem as if it were hardly possible to say anything new on this matter of pressing importance to the beginner, other than to emphasize the word of caution usually given. With the first full realization of the power at his command, the novice is apt to become keen to use it and show his friends how fast his new car can travel. Changes of speed shade so imperceptibly into one another that before he knows it the car is beyond his control, and herein lies the chief danger. The experienced hand and eye frequently serve to avert disaster when it appears most imminent, where the novice when suddenly confronted with a situation that is the outgrowth of a bit of carelessness in going too fast, finds himself helpless. It would certainly seem an entirely superfluous bit of advice under such circumstances to throw out a caution about trying to make a car take a right angle turn at high speed. There are natural laws that will not be denied, and one of them is that a body traveling in a straight line has a tendency to maintain its direction of travel that is proportionate to its velocity. The faster the car is going the more will it resent an attempt to suddenly change its direction; the result is invariably that it does continue in that direction, progressing sideways by rolls instead of on its proper base. The frequency with which accidents of this nature occur, shows how little the advice is heeded.

### How Not to Leave the Car Is Important.

It is assumed in this case that when the newly-fledged autoist finally takes possession of his car from the agent, the latter has initiated him into all the mysteries of its operation. He knows how to start and stop as well as handle the wheel and the change speed levers whether in traffic or out in the open, so that it is really the little difficulties that are most troublesome. But before taking these up, it is well to dwell on a point that is seldom, if ever, brought out in any of the lengthy dissertations so full of valuable advice that are constantly appearing, and that is, *how not to leave the car.* To one who has watched new hands in the course of being broken in at the steering wheel, the first thing to strike the attention is the fact that nine out of almost every ten will go through the same procedure in bringing the car to a stop and leaving it, and that is in failing to return the change speed lever to the neutral point. The emergency brake will invariably be applied with great care and firmness, but the change speed lever will almost as many times be left in whatever notch it happened to be when the car stopped.

Novices are not the only ones who do this, as witness the occasional accident that results from it. That the latter are not more numerous is probably due to the fact that emergency brakes as well as their interconnections with the clutch mechanism, are usually well built and seldom fail to perform their functions. In other words, it is not the care of the driver so much as the reliability of the mechanism that serves to keep down the number of accidents. This, then, is one of the things that every beginner should impress upon his mind most forcibly when learning to handle a car, and that is, never to leave it in such condition that it can by any possibility start ahead should the emergency brake accidentally be released while the motor is running. The latter should invariably be stopped when the car is left standing, the change speed lever should always be brought back to the neutral point whether the car is to be left or not. Apart from the necessity of doing this to avert accident, going into the first speed to start is always requisite so that a shift would be necessary at all events.

### Little Troubles That Are Perplexing.

It has been figured out as the result of a lengthy investigation into the subject that between them the carburetion and the ignition are responsible for 80 to 90 per cent. of all the troubles that afflict the automobile, and this will be borne out by the personal experience of the average autoist who runs his own car and doctors it when necessary. Doubtless the ignition can be accorded the first place as the inquiry referred to showed that it was accountable for fully 50 per cent. of all the involuntary stops while the matter of fuel supply provided 30 to 40 per cent., only a mere matter of 10 per cent. of all the troubles encountered being traceable to purely mechanical defections. This being the case, these essentials should be the first to come in for attention.

Take the ignition as a starter. Of course volumes can be written on it and still leave something unsaid, but in many cases the beginner is but little wiser after having waded through them. It is to be presumed that the newcomer knows the rudiments and further knows how to apply them. Next to these comes a knowledge of the system's weak points, and it is surprising how long it takes some new hands at the wheel to put two and two together when an ignition fault is in question. There seems to be little

doubt that the timer of the coil and accumulator system of ignition is the most prolific source of trouble, though this is something that it is hard to make the novice believe and something that it takes him a goodly time to realize for himself. To the average beginner there are only two things to go wrong about the ignition system and they are the spark plugs and the battery. Like the little girl who wore her tooth brush out on her two front teeth without touching the others, the beginner spends his time cleaning the spark plugs and testing the battery, probably running it down as much, if not more, in this way than in actual service. Of course, the timer is not always at fault, by any means—if there were any one thing about the ignition system that always could be relied upon as the sole source of trouble, matters would be greatly simplified. But it is responsible for a puzzling refusal of the motor to start in far more cases than it is suspected, particularly by the autoists whose experience in trouble-hunting has been limited. And by the same token, more spark plugs get an unnecessary cleaning than even the most finnicky of old maids would give a prized piece of china. Plugs do soot and batteries run down—that goes without saying, but they are not things of one idea by any means. Take the average ignition in the best of condition and its timer will nearly always be found to constitute its weakest link.

There are other things beside, such as the ubiquitous short-circuit, the sticking trembler, the poor ground connection or a chafed secondary lead, but these and a great many others that might be mentioned, were it profitable to do so, are of rather rare occurrence on the modern car that is at all well taken care of. It is an axiom that moving parts wear quickly, and rubbing parts most quickly, so that attention to those parts subjected to the greatest wear, whether mechanical or electrical, is usually time well spent when looking for trouble.

### Some Common Fuel Supply Troubles.

It would seem that the empty gasoline tank joke which so often was found to constitute the sole moving cause of what the fledgling took to be serious trouble indeed in the early days, should be catalogued as belonging to a prehistoric age in things automobile. That such a thing can happen to-day hardly seems possible, but the fact remains, as note the general demand for a reserve supply of fuel that cannot be used inadvertently by the driver. And the empty tank or its equivalent, which means lack of fuel, is at the root of not a few engine troubles that are traceable to this essential. Next to no gasoline, too much of it is the cause of much profanity. In fact, it is a far more common ailment than its opposite and all unknowing, the average green hand aggravates the trouble in nine cases out of ten. Failure to produce the welcome chug that means the motor is ready to assume its duties, calls for another whack at the carbureter and a return to the crank, the operations being repeated alternately.

I have often thought that a medal ought to be awarded to some of the well-known carbureter makers by virtue of the amount of abuse their devices will stand and still perform their duty. The way some drivers *tickle* the carbureter would cause an elephant's hide to itch; in fact, not a few seem to regard the little lever that touches the float as a sort of pump which requires vigorous battering to draw fuel up through the spray nozzle. Pressing it down as gently as if it were frail glass and holding it down momentarily will naturally accomplish the same object with far less risk of throwing the float out of adjustment.

There can be no denying the fact that there are some phases of the carbureter problem that are more than sufficient to puzzle the most experienced, so it is little to be wondered at that its vagaries should make it respected as a mystery by the less initiated, and because a thorough understanding of it is more or less rare it is looked upon as a proper subject for investigation by the amateur every time that there is anything inexplicably wrong with the motor. Which means, of course, whenever the motor refuses to start and frequent recourse to the crank fails to produce any encouragement. May be it is on the principle that some people are always ready to torment anything that cannot kick back, that so many carbureter adjustments are gone through every time there is trouble of this sort. Certain it is that this part of the motor is tampered with all too frequently on little or no provocation until it gets out of order for good, principally because it has been bungled with so much. This and hammering on the carbureter pin to tickle it are quite common practices, as any autoist who keeps his eyes open may see for himself. Nor does the average beginner appreciate the fact that too much gasoline is almost as bad as none at all when it comes to starting the motor—a state of affairs for which overmuch persuasion of the carbureter to induce the fuel supply's arrival at it is most often responsible. It should be remembered that turning the motor over by hand induces but a comparatively small amount of suction through the air inlet and that in consequence almost pure gasoline vapor is drawn in. Anyone who has tried knows it is not an easy matter to fire this. If it were not for the fact that such a condition usually cures itself in the interval between tinkerings by the evaporation of the gasoline and the formation of an explosive mixture, the average autoist would doubtless find his motor much harder to start than it is. An extra quick turn over compression is far more effective in creating the mixture requisite for the initial explosion than flooding the carbureter and when an encore or two at the crank fails of the desired result, momentary depression of the float will save both time and gasoline.

There is nothing startlingly novel about the foregoing suggestions, and the new hand who applies himself to the study of his car soon learns them for himself, not to mention a number of others equally valuable to him in the maintenance of his machine, but disregard of them on the part of the novice is very general in his early days and the fact that they are accountable for an amount of annoyance totally disproportionate to their apparent importance is seldom suspected. They are the little worries of automobiling and, like the little troubles of everyday life, they take on an appearance of great magnitude and importance at the moment. They stop the wheels of progress for the time being and when the ailment does not respond instantaneously to the first treatment that suggests itself to the self-constituted physician, he is prone to lay the blame on the machine instead of on his own lack of skill and patience in doing the doctoring.

## IN CASE THE PRESSURE FEED BREAKS DOWN.

One of the disadvantages of a pressure feed gasoline tank under the chassis is the danger of it being pierced by a collision or by a flying stone thrown up by the wheels of the vehicle itself. There are a number of preventatives in general use. Some firms place a stout steel bar across the frame to the rear of the tank, thus preventing it being hit by any vehicle in the rear; a number of laths held together by a strap are sometimes employed, and a large sheet of matting is not infrequently seen. This latter is not to be recommended. It is easy to spill gasoline, which is of course sucked up by the mat, and should a light reach it a short time after a serious flare-up would result. Some European chauffeurs surround their tank by a sheet of fine wire gauze, which effectively keeps off road projections and does not retain gasoline. If a transverse metal bar is used in conjunction with this all danger of the tank being pierced is removed.

Should the pressure feed system break down, either owing to the tank being pierced or owing to one of the air pipes breaking, a temporary remedy can be obtained as follows: Disconnect the main feed pipe to the carbureter and replace it by a rubber tube about a yard long leading from the carbureter to the driver's seat. If necessary a hole could be bored in the footboard; care should of course be taken to keep the tube away from the moving parts. A curved piece of metal piping is attached to the end of the rubber tube, and the long end put into a tin of gasoline. The can may be attached to the dashboard, and as reliable a flow of gasoline is obtained as if the regular fuel-feeding equipment were still continuing to perform its task as usual.

# LETTERS INTERESTING AND INSTRUCTIVE

### Information Wanted on Buggyabouts for So. Africa.

Editor THE AUTOMOBILE:

[788.]—As a subscriber and interested reader of your journal, will you kindly tell me which of the vehicles called "buggyabouts" you consider the most practical and reliabe machine, irrespective of cost. I am desirous of introducing them into this country, where our roads are not good and many small streams have to be crossed, and where high wheels are a necessity. Do you think the means taken of keeping the cylinders cool sufficient? It is pretty hot here in the summer, about 80 degrees in the shade. I should be glad to hear of the experience of anyone who has tried one. I am alluding to such vehicles as the Holsman, Dayton, and others. G. C. WILLIAMS.

Maritzburg, Natal, South Africa.

Like the "best car" question, on which you have doubtless noted our remarks in a recent issue under this heading, this is a rather difficult question to answer. It is narrowed down to a certain class, it is true, and naturally there is always a *best* in every class, as we ourselves have been at pains to point out, though this does not materially lighten the task of making a proper reply to your query. There are at present a dozen or more of this type of vehicle being turned out to a greater or less extent in this country, and no two are exactly alike, so that the adherent of any particular system, such as two-cycle air-cooled, four-cycle air or water cooled, planetary transmission, chain, friction or rope-drive can find something to suit his fancy. There are many days in summer here when the temperature exceeds the figure you mention, and little or no difficulty is experienced in efficiently cooling such motors as these cars are equipped with. They are designed for strenuous work, such as would naturally be called for in traversing the South African country, and can make good speed on the level. The number of parts is few and they are made as simple as possible, so that we should think that by ordering a number of the parts most likely to go wrong, thus having them ready for replacement at any time, considerable hard service could be obtained from such a car.

However, this does not bring us any nearer to the main point of your question, as to which is the best car of this type. To be frank, we really do not know, for, never having had an opportunity to test them out on the road, we have had no occasion to note their performance in use. We very much fear you will have to decide the matter for yourself, as in every other question of a similar nature; but the publication of your letter will doubtless come to the notice of a number of the makers, who will facilitate matters by presenting their respective claims for preference in the way of advertising literature. If any of our subscribers have had any personal experience with machines of this type we should like to hear from them fully.

### An Inquiry Regarding a Separable Differential.

Editor THE AUTOMOBILE:

[789.]—Being a subscriber to "The Automobile," I would like to ask you regarding a form of differential that is applied to each wheel, instead of at the center of the rear axle or on the countershaft, as is ordinarily the case. Any information you can give me will be appreciated. W. J. SEITZ.

Monroe, Mich.

The only invention of this class that we can recall was termed the Hedgeland anti-skid axle—that is, the only one that reached the market on any scale in a commercial form. We do not remember exactly the details of its mechanism, but the principle was that of the free wheel used on bicycles, the power being applied on rounding curves to the slower moving of the two wheels, the inner, while the outer was allowed to run free owing to its higher rate of travel. So far as we know at present, this device is no longer on the market and we have no knowledge of any other of this type.

### Points of Interest About Magneto Ignition.

Editor THE AUTOMOBILE:

[790.]—I have a four-cylinder car of the regulation type which is equipped with two independent ignition systems, one having a set of four unit vibrator coils, timer and accumulators, and the other a self-contained system consisting of a high-tension magneto, on which practically nine-tenths of the running is done. I do most of the work about the car myself, and have become familiar with it. What I would like to have some light shed upon is the radically different action of the magneto ignition as compared with the battery and coil side.

1. That is, why is it possible to advance the spark so very much more in using the magneto to start on without having the engine kick back, as would be the case were the battery current used under the same conditions? In fact, it is necessary to advance the spark control lever quite a distance in order to make it possible to start on the magneto.

2. How do you account for the fact that once under way it is not necessary to shift the magneto ignition except very rarely, also that shifting the lever back and forth a number of notches makes but little perceptible difference in the running of the engine. In other words, it is necessary to shift the lever considerably more to slow the engine down by retarding the spark when running with the magneto than with the battery, and it is seldom if ever necessary to advance it, the engine doing its best at a fixed point with this system.

A little light on these questions would be greatly appreciated by the writer, and probably by a number of others who have observed the same things in the handling of their cars. B. H.

Babylon, New York.

1. To take up the latter part of your question first, a little study of the working of a magneto will readily make clear the reason for advancing the spark much further in order to start the motor. As the armature of the generator is bi-polar, it generates but two impulses per revolution; between these there are neutral or dead points, at which no current is passing. The current wave produced is in the form of a peak, considering the neutral points as being on a horizontal line, as explained some weeks ago in THE AUTOMOBILE. From this line the current wave rises sharply while the poles of the armature are passing the edges of the pole pieces of the field, or cutting the lines of force of the magnetic field, as it is termed technically. The wave reaches its maximum when the center of the pole of the armature corresponds with the diagonally opposite edges of the field pole faces, when it begins to drop as rapidly, crossing the horizontal line and repeating the same operation beneath it. The meeting of each pair of these lines forms a triangle, with the horizontal line as a base; the apices of these triangles are the peaks of the current wave, and only a certain percentage of the latter is available for ignition purposes. This was graphically shown by the illustrations published in connection with the article already referred to. At the top of the peak the current reaches a maximum value; the object is to utilize it as near the latter as possible. Taking 15 per cent. of each side of the peak as the amount available, the duration of the generation of this portion of the current, measured on the arc of a circle representing the revolution of the armature, gives the number of degrees that it is possible to advance or retard the occurrence of the spark. In equipping a car with a magneto the latter is timed so that the greatest amount of running can be done when the generator is giving its maximum spark. But when turning the engine over by hand the generator is at a considerable disadvantage, owing to the extremely low speed at which it is revolved. It cannot produce more than a small fraction of its rated current output and it is not as quick to act, which explains both the reason for the necessity of giving the lever considerably more advance than with the battery, as well as the possibility of doing this without fear of the motor kicking back. In other words, the location of the spark advance lever has considerable influence on the character of the spark produced in the case of the magneto, which is naturally not the case with a battery and coil system, as the latter depends upon a constant source of cur-

rent, the only variation of which lies in its exhaustion or gradual approach thereto when the spark becomes weaker, and considerably more advance is necessary. Apart from this and the fact that improperly adjusted vibrators or other sources of current wastage tend to run the battery down, it is not at all influenced by the same considerations as those mentioned with regard to the magneto. The fact that it is possible to safely start the car with the ignition advanced as well as the fact that it does not require constant shifting are both advantages in its favor.

2. Much of the information requested by your second question has been covered in answer to the first. As already explained, the peak of the current wave represents the maximum current value and, accordingly, the best possible running point for the engine; no amount of shifting one way or the other can improve it. Another very important reason is the fact that the magneto acts *instantaneously*. There is a popular belief that this is true of the electric current under all circumstances, but such is far from being the case. There is quite a perceptible interval between the time the battery current is sent into the primary winding of the induction coil and the moment the spark is produced in the cylinder. This arises from several causes, such as the fact that the core of the coil must be magnetically saturated before it acts, the inertia of the vibrator must be overcome, and the like. The magneto armature is also wound to generate the current at a very much higher potential or voltage than is possible with a battery. The fact that shifting the spark advance lever back and forth on the sector makes little perceptible difference in the running of the motor is due to the excellent current wave produced by your magneto; its value is the same for some distance either side of the peak, which also accounts for the greater distance it is necessary to move it before a retarding action takes place, or before a point is reached where a much weaker part of the current wave produced is being utilized.

### Varied Queries About Christie's Grand Prix Racer.

Editor THE AUTOMOBILE:

[791.]—Kindly answer in "The Automobile" these questions: Has the Christie Grand Prix car any front springs? How is it possible that the steering wheels are fully respondent to the steering wheel and still transmit the motive power? How is the connecting rod attached to the front axle? Why is not the two-cycle engine more popular if it gives more even torque than a four-cycle engine? In an emergency how can a car be run without the pump? Which shaft travels the faster, the cam or crank, and how much faster?

Bayside, New York. VINCENT BOELKE.

Walter Christie's Grand Prix racer has coil springs and heavy rubber buffers as front suspension. The front road wheels respond readily to the steering wheel owing to the interposition of a universal joint between each end of the driving shaft and the road wheels. Christie's machine has no front axle; the connecting rod is behind the circular steel crankcase, set across the fore end of the frame and united to the steering arm in the usual way. Steering control, however, is by rack and pinion. Full particulars of the machine will be found in the April 11 issue of THE AUTOMOBILE. Although possessing distinct theoretical advantages, the two-cycle engine, as at present constructed, has certain grave defects. It is not so economical of fuel; it has not the suppleness of a four-cycle engine, and is consequently less suitable for automobile work; there is always a danger of premature ignition if the engine does not clean out the burnt charge sufficiently. On some engines the pump could be disconnected and thermo-siphon water circulation employed temporarily. Owing to the smaller volume of water and the smaller section of the tubes, however, it would only be a makeshift remedy at best, and on many engines would altogether fail to produce a flow of water. The crankshaft travels the faster; ratio on a four-cycle engine is 2 to 1.

## TESTING OUT MOTORS AT THE POPE PLANT.

Editor THE AUTOMOBILE:

[792.]—At the present time anything connected with an automobile is a subject of absorbing interest to the average man, and a visit to an automobile factory which is producing cars in large quantities is a delightful revelation.

Few men who purchase a car fill up the gasoline tank and the oilers and then start off for a tour have any comprehension of the patient care and skill which follows every operation of construction and assemblage from the first conception until the machine is finally handed over to the customer. No matter how carefully or accurately an automobile may be made it cannot do good service and live up to the high standard required by its conscientious maker unless each one of its many parts is properly adjusted so as to work in harmony with all correlating parts.

In order that the manufacturer may be absolutely certain that machines leave his hands in proper condition for immediate use it is necessary to employ a corps of skilled and experienced mechanics, not only for the purpose of testing and trying out each part as it is assembled, but finally to prove up the whole car as a unit.

A brief sketch of the methods employed will undoubtedly be of great interest. Take, for instance, a four-cylinder gasoline engine; while it is comparatively simple in construction it is composed of many parts, and it is absolutely necessary that each one of these parts be made with accuracy and without variation from the accepted standard. The parts are so carefully designed that in a first-class automobile factory the engine when put together in the assembling room goes together without the use of elaborate tools other than the wrenches necessary for fastening and bolting the various parts into place.

In the great Pope plant at Hartford there is one special department devoted exclusively to the testing of engines, and it is a very fascinating sight for the visitor to go into this room and see engine after engine in a long row, fastened each to its own stand and working away smoothly and quietly without seeming effort. When the engine is delivered to the testing room it is securely bolted to an iron stand and is then connected by a belt to the main line shafting and driven for hours by outside power, being fed with oil and other lubricants and continually supplied with water through its circulating system. This work is continued until all the adjustments are accurately made and the engine runs freely and smoothly, without heating, or, in other words, it "finds itself."

When it has passed this test it is then connected with a fuel tank and with its ignition system, and then started and run under its own power in the same manner as it would be in the hands of an owner. This test always takes a number of hours, and the exact and rigid requirements of the Pope factories demand that it shall stand it without a murmur, running with quietness and smoothness and without heating in any of its essential parts. If the engine fails to pass this test it is sent back to the assembler, who takes it to pieces, locates the trouble, and replaces with new parts those which are not running satisfactorily.

Any engine which passes this crucial test is in shape to be assembled into a complete chassis and put through the test of actual use on the road as a part of a complete car. After the automobile is put together and passed by the various inspectors it is turned over to the final testing department, which is composed of men who by their long experience and special training are fitted to adjust and tune up the car to "concert pitch." A set of old tires is put on the wheels and a special testing body is fitted to the chassis and the car is then sent out for practical road adjustment in the hands of an expert.

In the vicinity of Hartford, where the main Pope plant is located, it is an everyday sight to see these cars running in numbers with their rough bodies and mud bespattered wheels over hills and country roads for miles around. It is the testing all along the line which insures a product satisfactory not only to the makers, but to the users. It is practically impossible for a car to pass through all these tests and trials without there being detected any slight lack of adjustment or flaw in the entire construction. When so proved up the car is turned over to the shipping department and the makers feel sure that it will go into the hands of the consumer in perfect condition.

CHARLES E. WALKER,
Hartford, Conn. Vice-President, Pope Mfg. Co.

## MAYBE THERE IS WATER IN THE CYLINDER.

Editor THE AUTOMOBILE:

[793.]—Answer to No. 767. Take off cylinder head and see if water is not leaking into cylinder. This would cause engine to be very hard to start, as a small quantity, say a tablespoonful, of water in cylinder makes it almost impossible to start. Take the gasket off and you can tell from that, as it will look black where the water leaked through. I had a car come to my garage that was in just this fix—everything seemed all right except that it was very hard to start after it had stood idle.

I hope this will help No. 767. I should like to hear from him as to whether this is the trouble.

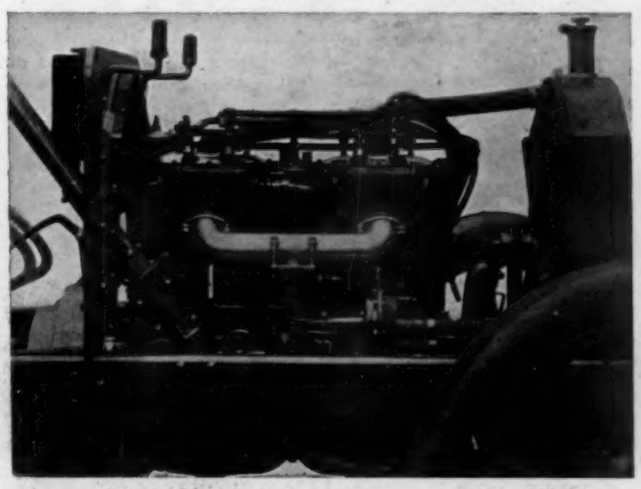
Corsicana, Texas. CLARENCE THOMAS (Auto Doctor).

HOW THE NEW PACKARD LOOKS WITH LIMOUSINE BODY.

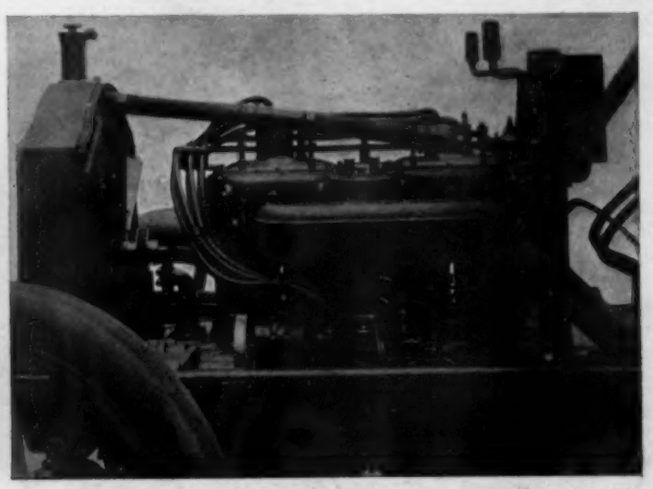
IN line with its well-established policy of devoting its entire attention to the production of a single model each season, which it has now consistently adhered to for several seasons, the Packard Motor Car Company, Detroit, will pin its faith for the season of 1908 to the Packard "Thirty," which is essentially a continuation of its predecessor of the present generation, barring development in the shape of detailed refinement that has been suggested by experience and observation during the past year. All those basic features of construction and design that have fulfilled the object of their creator by giving satisfactory service on hundreds of cars in daily use all over the country, have been retained intact, forming the groundwork upon which the designer has built up a system that may appropriately be termed "thoroughly Packard" throughout, so long have its principal elements been identified with this car.

Among the chief changes that will serve to distinguish the new car to the experienced eye will be its slightly increased wheelbase and the employment of 36-inch wheels, though the most distinctive marker that will enable the automobile-wise to immediately pick the 1908 model out of a crowd, as it were, consists of the altered design of the radiator cap or filler opening. Realizing the inconvenience of the screw-thread method of fastening such a part, a bayonet form of lock has been adopted for it, and the same is true of the fuel and lubricating oil-tank caps, thus rendering their removal the work of but a moment.

The rating of the four-cylinder water-cooled motor, from which the car takes its name, is 30-horsepower at the extremely moderate speed of 650 r.p.m., but its dimensions of 5-inch bore by 5½-inch stroke make it apparent that this is merely nominal and that its actual output is far greater. In fact, it is rated according to the French "system," and as the French autoist has to pay an annual tax based upon the horsepower of his car, it is easy to see why horsepower ratings are kept low regardless of motor dimensions, in view of which it is not surprising to learn that the Packard motors have turned up to practically double their nominal rating on the brake. Their French rating grows out of the fact that the cylinder castings, as well as the pistons, piston rings, blank and exhaust manifold castings, are imported from France in the rough, being cast from a gray iron mixture specially adapted for the construction of such parts. The cylinder castings are of the twin type, with oppositely disposed valves of the outboard type, actuated by separate camshafts enclosed in the crankcase. High-carbon open-hearth steel, that is received in the shape of hammer-forged billets, constitutes the material from which the crankshafts are cut. The shafts are oil-tempered, bearing surfaces ground, and the entire shaft machine-



INTAKE SIDE OF PACKARD MOTOR, SHOWING CARBURETER, ETC.



EXHAUST SIDE, SHOWING OIL PUMP, MAGNETO AND TIMER.

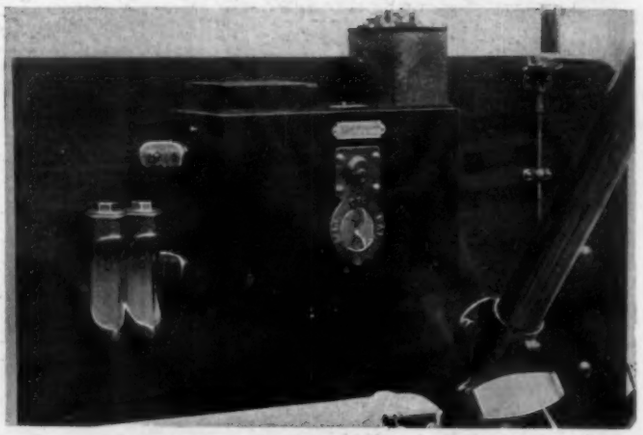
finished. The connecting rods are drop-forgings, and both the crankpin bearings and the main bearings are of special Parsons white bronze, the piston pins being carried in hard bronze bearings. Grinding is employed wherever possible to obtain extreme accuracy, such as in the finishing of the inside of the cylinders, the pistons, piston rings and the like, all three being "lapped" with a suitable polishing agent in addition, giving these parts the highly finished surface that is so essential to an absolutely smooth working fit.

The crankcase is cast of a special aluminum alloy in three horizontal sections, the camshaft gears, as well as those of the magneto and the pump, being contained in a separate but integrally cast oil-tight extension of the crankcase. The uppermost section of the latter forms a base for the engine and is supported directly on the side members of the frame. Between the lugs or transverse supporting arms is cast an integral web entirely enclosing the space between the motor and the frame from beneath, thus affording complete protection to the engine as well as its accessories, and particularly the magneto.

DIFFERENTIAL AND CHANGE SPEED GEAR.

The Packard motor is distinguished from the majority of American motors by other departures from what may best be termed standard practice, owing to the number of instances in which it is followed. Chief among these is the retention of a governor, of a special hydraulic type, originated by this house and long a feature of its cars, while the other is the use of a water-jacketed carbureter. The latter is of special design and construction throughout. It is of the standard aspirating-nozzle, float-feed type, with an automatic auxiliary air-inlet, and is fitted with a butterfly throttle. The auxiliary air-inlet is of the poppet-valve type, and is controlled by a small helical spring, the tension of the latter being readily adjustable to suit changing atmospheric conditions by means of a sliding wedge actuated from the driver's seat by a small lever on the dashboard. The fuel supply is taken by gravity from a tank under the forward seat, and having a capacity of twenty-one gallons, while the water-jacket circulation is a part of the cooling system of the car. This is also true of the hydraulic governor, which acts on the butterfly throttle. The cooling system consists of a fin tubular radiator supplied by a gear pump and supplemented by a belt-driven fan mounted on annular ball-bearings. But six gallons of water are necessary.

Both the ignition and lubrication systems are of considerable interest, and particularly the latter as being representative of as close an approach to ideal simplicity as can be found in this very important essential of the car. More than that, it has the great advantage of being practically self-contained, thus

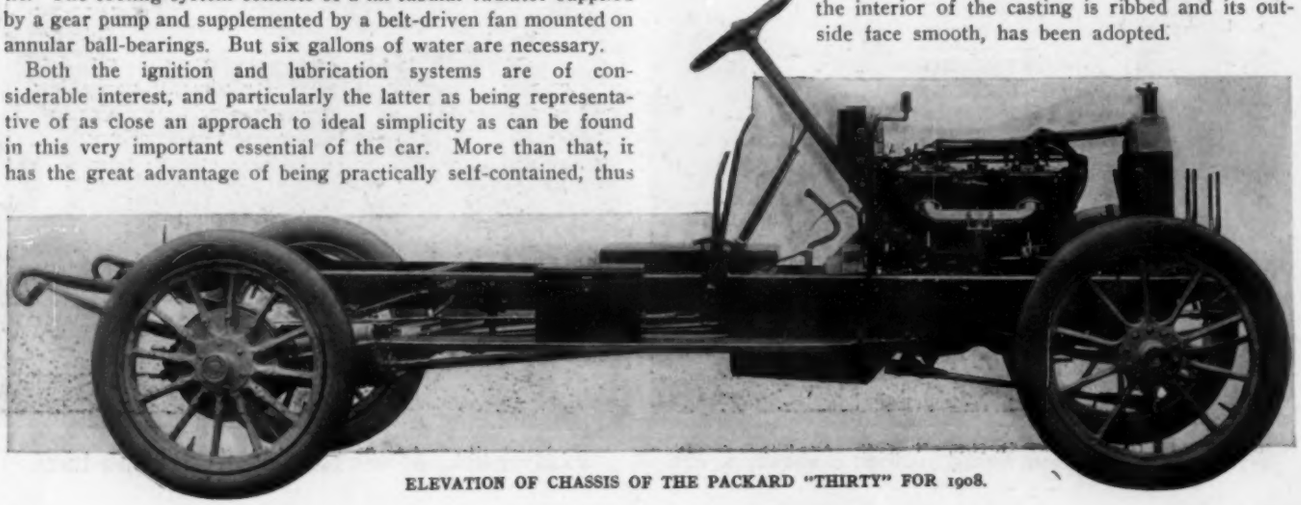


SEVERE SIMPLICITY OF THE PACKARD DASHBOARD.

requiring but a minimum of attention for its proper maintenance. It consists of a cylindrical copper tank placed upright between the cylinder units, this location insuring a supply of oil at the proper consistency at all times, despite weather conditions. A double-plunger pump, actuated by a worm on the exhaust camshaft, connects with this tank of oil. There is a transverse central partition in the oil pan of the crankcase to preserve the oil level in climbing or descending grades, and each of these compartments is fed separately by the oil pump. Before passing to the crankcase the oil goes through two sight-feeds on the dash.

High-tension ignition is employed, an Eisemann magneto being used in regular service, while an imported Fulmen set of accumulators is used as a reserve and for starting from the seat. The magneto proper is of the low-tension type, employing a single non-vibrator coil to transform the current, distributing it through the synchronous mechanism on the generator. On the accumulator side a single vibrating coil is used, both these units being placed in a case on the dash, while the timer is mounted on a vertical shaft at the rear of the motor. There is but one set of secondary connections and one set of spark plugs, the distributor of the magneto being employed in the same capacity when the car is being run on the battery, thus greatly simplifying not alone wiring, but also reducing the amount of apparatus needed.

With the exception of the use of a newly designed universal joint of the yoke type, fitted at the clutch end of the propeller shaft, the various steps in the transmission of the power are the same as in former models. The Packard screw-and-nut-actuated internal expanding clutch is retained, as is also the same type of rear-axle unit construction that has long been a distinguishing feature of this car. This is shown complete in one of the accompanying illustrations. The same housing covers gear-set, final drive and differential, and a new design, in which the interior of the casting is ribbed and its outside face smooth, has been adopted.



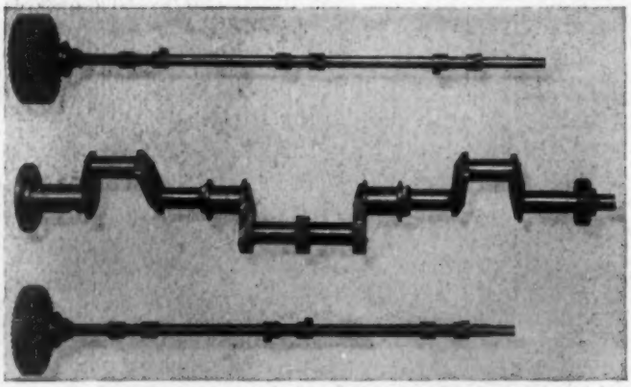
ELEVATION OF CHASSIS OF THE PACKARD "THIRTY" FOR 1908.

# THE GREAT CHADWICK SIX

IN addition to being one of the first of the six-cylinder models for 1908, of which full details are forthcoming, the Great Chadwick Six represents an example of automobile construction embodying numerous features that are both out of the ordinary and of interest from a technical as well as a popular point of view. Its title is an apt one, the significance of which is only appreciated upon reviewing the specifications of the car itself, as the latter is one of the largest of its kind ever regularly catalogued either in this country or abroad. Large cars are not uncommon any more than are those of the six-cylinder type, but a six-cylinder car of this size is certainly a rarity, as will be at once apparent when it is stated that the cylinder dimensions are 5 inches bore by 6 inches stroke, while the motor is geared considerably higher than is customary with anything but specially designed racing cars, the motor making but 19-10 turns for every one of the driving wheels. Despite the unusual size of its cylinders, as well as the fact that its compression is reasonably high—in fact, investigation shows that the latter essential is not far from the average, reaching as it does, 70 pounds to the square inch absolute—the motor of the Great Chadwick Six is rated very low, merely being credited with 70 to 75 horsepower. A few years ago such an engine would have been rated at double this, and no doubt it shows a substantial excess over its rating on the brake, particularly as its normal speed is 1,100 r. p. m., which gives the car itself a speed considerably better than a mile a minute without urging the motor in the least. More than that, the excess of power is such that probably the motor will never be called upon to develop more than 50 per cent. of its rated capacity under anything except extraordinarily bad conditions.

INLET SIDE OF MOTOR OF THE GREAT CHADWICK SIX.

**Motor Design.**—It will be evident at first glance to those who are familiar with previous Chadwick productions that the same ideas and features of construction that have always characterized the work of this designer have been perpetuated here. The first of these to attract attention is the peculiar cylindrical copper water jackets completely surrounding each of the dual cylinder units as well as their valves. It would seem that this arrangement necessitated the use of a comparatively large quantity of cooling water, but quite the reverse is the case, as only six gallons of water in all are required for this large motor. The idea of the design has been to attain uniform cooling and to achieve this result a much larger mass of water is concentrated around the hottest parts of the cylinder than is usually the case in the great majority of standard American cars. The upper ends of the valve chambers project through the top of the jacket and are threaded to take spanner nuts which, when set up in place, serve to hold the jacket down against its seat cast on the cylinder. This integral flange fits the inside of the jacket and the latter is retained in place by driving a special steel ring down over the outside; the flange on the cylinder has a liberal face and is given a slight taper, thus facilitating the making of a water-tight joint at this point. The system also dif-



DETAILS OF THE FOUR-BEARING CRANKSHAFT AND THE CAMSHAFTS.

fers from others in that two supply openings are provided, that entering the exhaust side being larger than its opposite near the inlet, both coming up from below. As shown by the illustration of the carbureter side of the motor the water leaves the jackets at their centers through nipples connected with the return pipe to the radiator. A rotary pump driven by a jaw clutch from the end of the magneto shaft, and a belt-driven fan complete the cooling system. The valves are oppositely disposed and are actuated by separate camshafts with integral cams as shown by the illustration, which also depicts the four-bearing crankshaft. Laminated fiber and bronze and steel pinions, completely encased, are employed and make for silent running.

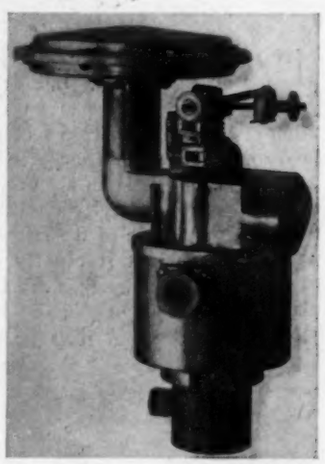
**Carburetion and Ignition.**—Probably the most distinctive feature of the carbureter is the manner of its control. The throttle lever is connected with a system of linkage by means of which both the amount of mixture permitted to enter the cylinders is not only varied, but likewise the amount of gasoline that enters into the composition of that mixture, and as this is adjustable so as to cause the throttle to open faster or slower than the fuel admission valve opens, an extremely wide range of carbureter effects is easily obtainable. Fuel is admitted at the side of the lower portion of the body of the carbureter which is surmounted by the float of annular form. The spray nozzle is located in the center of the open part of the float and is surrounded by the main air-passage, the auxiliary supply being regulated by the diaphragm shown and entering through a valve at the left, controlled by a small helical spring. A small hole in the center of the top of the diaphragm case admits amospheric pressure to this side of the diaphragm, its vertical movement being regulated by the speed of the motor and the consequent depression set up on its under side.

The ignition is duplicated throughout, a rather unusual thing being found in the employment of a set of dry cells as the source of starting current, the running all being done on the magneto end of the system which consists of a LaCoste high-tension magneto forming a self-contained unit on one side and a Bosch magneto of the same type on the other. Each magneto is wired to a separate set of spark plugs, the former system also being interconnected with a Herz timer and La Coste coil, and using the set of dry cells to start on, so that in reality the car actually has three systems of ignition, two of which are wholly independent, while the third may be used separately in case of emergency, particularly as it is used with a third set of plugs. All the wiring is enclosed in copper tubes.

SHOWING THE COMBINED DISTANCE ROD AND CHAIN CASE IN PLACE.

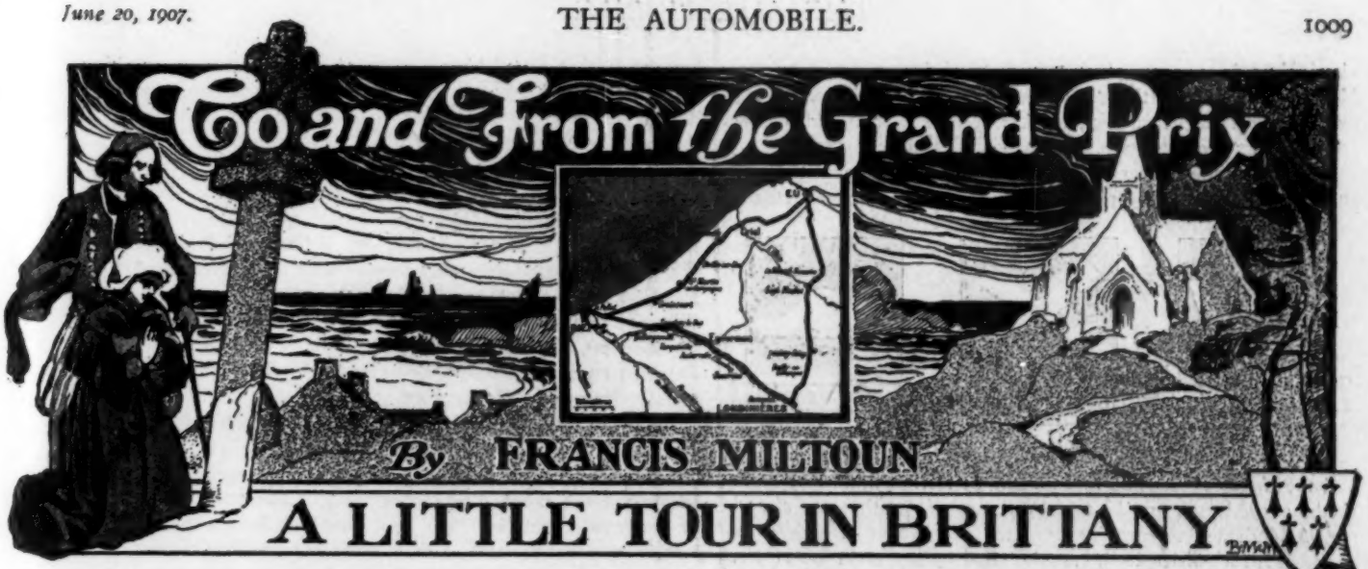
**Transmission System.**—This essential of the car is distinguished by the use of a change speed gear set of original design in that the countershaft carries a large double-faced bevel to each side of which the main and lay shafts of the gear-set are respectively engaged. The double bevel is fixed to the differential sleeve. Four speeds forward are provided, but the design is such that the set is unusually compact, only one pair of spur gears being used for each of the three speeds below the high, while the latter is direct. With the exception of the intermediate reversing pinion, which, on account of the slight measure of service demanded of it, is mounted on a bronze bearing situated below the oil-level of the case, the main and lay shafts as well as the countershaft carrying the differential are carried on D. W. F. ball bearings. Both the bevel and the spur pinions are of chrome nickel steel.

The clutch is of the standard conical type, the male member of which is faced with sheet phosphor bronze, riveted on and turned true in place, the female member being formed in the flywheel itself. Through this phosphor bronze facing are placed 60 cork inserts 3-4 inch in diameter, the latter being hand-finished in place and projecting very slightly above the metal. The clutch is of a somewhat large diameter—17 1-2 inches—but is very light, which is also true of its single actuating spring. Final drive is by double side chains and the chief feature of this essential of the car is the employment of a very ingenious form of chain case, some idea of which may be gained from the illustration showing it in place. This chain case is combined with the distance rod separating the rear axle and the countershaft, and its construction embodies many novel features. The distance rods are banjo-shaped castings of manganese bronze, the rear axle passing through the center of the large end, permitting them to swivel about while the forward end accommodating the countershaft is in the shape of a slot to permit adjustment of the latter, this being accomplished by means of a set screw and pinching lock screw which draws the split-end of the bronze casting together. These distance rods also carry the two halves of the aluminum chain case, no provision for telescopic action being necessary in the latter, as the forward part of the case does not move with the chain-adjusting travel. Though very light, the construction is very substantial and is moreover very simple, which permits of its ready removal and replacement when necessary, at the same time providing that thorough protection which adds so much to the efficiency of the chain drive.



THE NEW CHADWICK CARBURETER

**Chassis Details.**—A channel section frame of chrome nickel steel forms the foundation of the chassis, the motor base lugs being bolted directly to the main frame, while the gear case is suspended between two of the central braces of the main frame, no subframe being employed. The front axle is a one-piece chrome nickel forging with a 4-inch drop, and the rear axle is of similar material and construction. The suspension consists of two 40 by 2 inch semi-elliptic springs forward and platform system in the rear. The wheels, all of which run on two sets of D. W. F. ball bearings, measure 36 by 5 inches and are shod with Continental tires.




AROUND Brittany, in connection with the tour of Normandy, will require an additional five or seven days, and the two, combined with Touraine, say three weeks, allowing at least a nodding acquaintance with the charms of these three fairest and most picturesque provinces of France.

If Normandy or Touraine be considered separately, and one comes out direct from Paris, there are 250 kilometers of the Route de Bretagne before Mayenne is reached via Alençon, or 300 to Laval via Chartres and Le Mans. It is a superb itinerary by either route, but if one is bound for St. Malo and the Côte d'Emeraud, or Concarneau and its *plages*, there is still the matter of another 300 kilometers to roll off before one arrives at their objective, and one will have no time to linger en route, save to make such passing observations as fancy suggests.

From Paris, then, the best route is out via Versailles, Chartres, Nogent-le-Rotrou and Le Mans, through the very heart of one of the finest agricultural regions in all France, with Routes Nationales all the way, great tree-bordered, sandy-surfaced roads without flints, hidden level-crossings or bad curves, save here and there where one passes through some little old-world village with a cobble-paved main street. It is in these crowded little French towns that most automobile accidents happen; but the local authorities generally cut your *vitesse* down to 12, 10 or 6 kilometers an hour and put up great staring signs reading *"Ralentir"* or *"Virage Difficile,"* so it's your own fault if anything happens. What you want to look out for before and after coming to a town are the *culverts* and *canivaux* crossing the road; many a back spring has been broken by taking them at a speed above a dozen miles an hour. Generally they are marked, and so, too, are dangerous cross roads, by the distinctive signs of the A. G. A. (the man who evolved this system of road signs knew the needs of automobilists).

From Le Mans, practically the gateway to Brittany, it is another hundred kilometers to Laval. Coming out of Paris, lunch at Nogent-le-Rotrou, at the Hotel du Dauphin. There is nothing of luxe here—simply plain, bountiful fare, cooked and served by the *patron-chef* of the hotel (*vin compris*), and charged for invariably at the same price, whether you be a peasant-farmer in town for the day with a donkey cart loaded with vegetables or an automobilist in a flying "fifty," with a tonneau loaded with fair women. This is the charm of French travel by road. It's only in the resorts, like Biarritz, Vichy, Trouville or Aix-les-Bains, that one pays through the nose, as the French say.

"TROT, TROT TO MARKET" ON THE BRITTANY ROADS.

Nogent-le-Rotrou is worth an hour after lunch, looking over its three mediæval monuments, its two churches dating from the tenth to the fifteenth century, and its eleventh-century ruined chateau, unspoiled by modern embellishments.

**Where You Can Breathe the Atmosphere of the Middle Ages.**

It is sixty-seven kilometers to Le Mans and seventy-five more to Laval, where you may sleep at the Hotel de Paris or keep on another thirty-five kilometers to Vitré, by which time the entire topographical aspect of the land has changed and become sterner, with more of the quality artists call character and less of the scenic prettiness of the stage.

Laval is really worth seeing. It is an admirable relic of an old mediæval town, with a twelfth century donjon, a Renaissance chateau, a twelfth century church and a fortified gateway, besides a history made vivid by its seigneurs of the moyen age. Indeed, Laval and its neighbor, Vitré, with an excursion to the Chateau des Rochers of Madame de Sévigné, are, taken together, worth a day's sightseeing, if that's what you are out for, and probably it is. Thus keep Laval and Vitré on your route card.

Vitré's chateau is the best photographic subject among all the chateaux of France, save perhaps Langeais in Touraine, therefore don't forget to carry your kodak along with you.

At Vitré the Hotel des Voyageurs, besides the railway station, has good, but small, garage accommodations, and *chambres hygiéniques*, installed at the suggestion of the Touring Club de France. The combination, with the very excellent fare and the extremely moderate charges, will be hard to beat in all Brittany or Normandy. For that reason it is worth making a long day to arrive at Vitré for the night. The excursion to the Chateau des Rochers should not be omitted. It is five kilometers from Vitré, along a beautifully boulevarded roadway, quite different from what it was in the days of Madame de Sé-

vigné when that accomplished letter-writer informed her daughter, Madame de Grignan, that "finally she had arrived," after having made the last league on foot, leaving her coach stuck among the rocks and mud of a slough.

There is nothing very massive about the chateau, but it's ensemble is exceedingly picturesque. One may visit the chapel

HANDY WARNING SIGNS ARE EVER PRESENT.

and the *chambre* occupied by Madame de Sévigné, and may walk in the alleyed park and be told by the *concierge* that *par ci* and *par là* Madame la Marquise used to take her promenades. A very beautiful garden it is, too, designed by the great Le Notre, who laid out the gardens of Versailles.

### Something About the Ancient Capital of Brittany.

If one will, he may go on to Rennes, thirty-five kilometers, the ancient capital of the province, but it's a stuffy, pompous hole with hotels always full to overflowing with congressionists of a medical conference or something of the sort, and automobilists have a scant welcome. The only thing of note to see at Rennes—its cathedral is abominably ugly—is the Council Chamber of the Palais de Justice where the Parlement de Bretagne formerly sat. This is not prejudice, but the writer has got a rule for touring which invariably works well: make your stopping place a small town, not a large city; leaving price out of the question, it's more amusing and the fare is better and more characteristic, and that verily is what one wants, or ought to want, when traveling by automobile.

Cut Rennes out, then, and go north from Vitré to Fougères, twenty-eight kilometers. Merely a sight of Fougères, *en passant*, is worth coming miles for. It is one of the best examples of a decrepit old walled town to be seen in France outside of Carcassonne. It is palpably a ruin, and its walls and towers and crenelated battlements and pinioned chateaux are all inextricably mixed in such a maze of architectural wonders that it looks more like a thing of the imagination than reality. Not many tourists—automobilists or others—"do" Fougères. This is a pity! Anyway pass through it en route for St. Malo, Dinan and Dinard.

From Fougères to Dinan, via Dol, is seventy-eight kilometers and about the same to St. Malo. The former is preferable, as it allows one to make a gorgeous excursion by a little steamer down the Rance to St. Malo and Dinard. It is a trip not to be missed by all lovers of the beautiful.

From Fougères to St. Malo, including the steamer trip, is good for a day. The Hotel de France et Chateaubriand—the ancient home of the author himself—is very good indeed, but a typical tourist hotel where one eats at one of those interminable long-drawn-out tables d'hôte, the curse of all resort hotels.

### Sea, Sky and Land Form Color-schemes of Wondrous Beauty.

The historical monuments of St. Malo and its neighbor, St. Servan, their cathedrals, the Chateau, the old fortifications, the Tour Solidor, etc., are wonderfully interesting, and the green sea and blue sky setting of it all is as impressive as anything of its kind in nature or art.

From St. Malo westward to St. Brieuc is the Côte d'Emeraud, one of the beauty spots of the coast line of France. It is lined with little resorts and detached villas, and the panorama is only comparable with that of the Riviera—the Côte d'Azur and Biarritz, and about there—the Côte d'Argent, with, of course, quite a different color scheme.

From Dinan to Brest, almost to the extremity of Finistère, is something over two hundred kilometers of exceedingly picturesque rising and falling route nationale. Generally speaking, the surface is good—the best in Brittany—but there are many hills of from eight to ten per cent., not so heavy in grade as the cross-country routes, say from Dinan to Vannes or from Morlaix to Quimper, but annoying all the same, for it's a continual coaxing and pushing of one's automobile in order to keep moving without being obliged to change speed.

After Dinan comes Lamballe, St. Brieuc and Guingamp, all of them typical Breton towns, peopled with a strudy, dark-skinned folk, who, for a fact, are becoming so used to intercourse with strangers that they have lost not a little of their former picturesqueness. The *chapeau de paille* and the *gilet rond* are giving way to an imitation *panama*—made in Madagascar—and a sweater knitted in Nottingham. Farther west in Finistère, and in the Penmarc'h peninsula, the costumes of the peasant men and women are, more or less, as they were a hundred years ago.

A detour of a hundred kilometers might be made from Guingamp, via the coast towns of Plouha, Paimpoul (where most of the women are widows, their menfolk having been mostly lost in the Newfoundland or Iceland fisheries), Tréguier (Renan's birthplace) and Lannion. Practically this detour will take a day. There is much of interest en route and it's worth going slowly over the ground.

If one leaves Guingamp in the morning—a much better stopping place than St. Brieuc, it's only half the size, though both are full of quaint houses, curious shops and architectural surprises—he might lunch at Tréguier, spend an hour in the afternoon at Lannion, full of curious old wood and stone houses, or stop en route and have a look over the old Chateau de Tonquédec, ten kilometers distant. This last is a grand old ruin of the fourteenth century, with a donjon with walls ten or a dozen feet thick and all the accessories of a mediæval fortress-chateau.

The road drops down from Lannion in thirty-six kilometers through a wild, savage region with sharp descents to Morlaix, the Sous-Préfecture of Finistère. The Hotel de l'Europe is double starred in the Guide Michelin and the Hotel de Provence bears a single star, but the latter is decidedly preferable. Each has garage accommodation of a very acceptable kind.

### Religious Ceremonial Remains Dear to the Sturdy Breton.

There are numerous sights at Morlaix in the town itself, and the excursion to the fourteenth century fortress, built by the bourgeois of Morlaix as a defence against the English, in the Rade de Morlaix, a great land-sheltered bay or harbor, should not be omitted from your visiting list.

Directly north of Morlaix, twenty kilometers out and back, is St. Jean-du-Doigt, a famous place of pilgrimage among the

Breton fisher folk of Finistère and the Côtes-du-Nord. In the church is preserved as a relic the index finger of the right hand of St. John the Baptist. The great religious fête, known as the Pardon of St. Jean-du-Doigt, takes place on the 23d of June in each year, and is perhaps the most celebrated of all these great religious pilgrimages of Brittany.

Northwest of Morlaix is the Pays de Leon and Finistère, a region to be "explored" by any automobilist who likes to get away from the beaten track. The roads are passable, that is, good enough as to surface, when they are not "loose" or broken up, but the hills are practically a continuous performance. It is a region away off from the rest of France, the "Land's End" of North Europe, and no one among its peasant population knows or cares for anything away from his immediate environs. *Essence* and *huile* are hard to find; there are only 110 automobiles registered in all Finistère, and this includes Brest, Morlaix and Quimper, which account for most of them. In the Côtes-du-Nord there are but 70, in Ile et Villaine 144, and in the Morbihan 59, making less than four hundred in all Brittany. No wonder that the native never ceases to marvel at *la mécanique* and marvel still more when you put in the "reverse." If you've got a "cut-out" from your exhaust box he flees in terror, thinking the whole thing is about to blow up. It will be some years yet before *"ces choses droles, ces automobiles"* will fully "arrive" in the wildnesses of Finistère.

Between Morlaix and Brest, Landivisian and Landerneau are interesting, but Brest itself had better be omitted. From Landerneau to Plougastel is a dozen kilometers, and the view over the great Rade de Brest is finer than anything from the other shore. For the night Plougastel-Daoulas is not bad. The Hotel des Voyageurs has been braced up quite recently by the Touring Club de France and is about the most modern thing in the hotel line in these parts outside the large towns.

From Daoulas, fifty or sixty kilometers out and back, will bring one to Crozon and Camaret. If you would like to know what it looks like first there is a picture of "Sardine-boats at Camaret," by Cottet in the Luxembourg Gallery at Paris. There are no sunsets quite so brilliant in western Europe as those over the bay of Camaret. If that interests you the detour is worth making, otherwise one reaches Quimper from Daoulas, via Chateaulin, by route nationale No. 170, in sixty kilometers.

From Quimper there is a hundred kilometers round to Douarnenez, Pont Croix, Pont l'Abbé and Penmarc'h that shows the best of Brittany; the quaintest, the least spoiled and the most picturesque customs and costumes of men and women.

The *coiffes* of the Breton women are the strangest and most varied in France, and those of the women of Penmarc'h, the Bigoudens, the quaintest of all.

Quimper has twenty thousand inhabitants, and if one excepts the great marine arsenal of Brest is the metropolis of Finistère.

From Quimper to Rosporden is twenty-two kilometers by the route nationale, Nantes-Quimper. Rosporden is a sleepy, dull town, with nothing to detain the tourist more than a glance of the eye, but it is the turning point for Concarneau—where the sardines come from.

Concarneau is ancient, picturesque and smelly, but it is delightful all the same, and the sea food served at déjeuner at the Hotel des Voyageurs will be remembered for long. *Langouste rémoulade* and *sardines fraiches* are *plats* which cost relatively large sums of money on the Paris boulevard, but here they are regular *plats du jour* and you pay three francs only (*vin compris*) for your déjeuner or dinner.

### Americanism Has Invaded Independent Brittany.

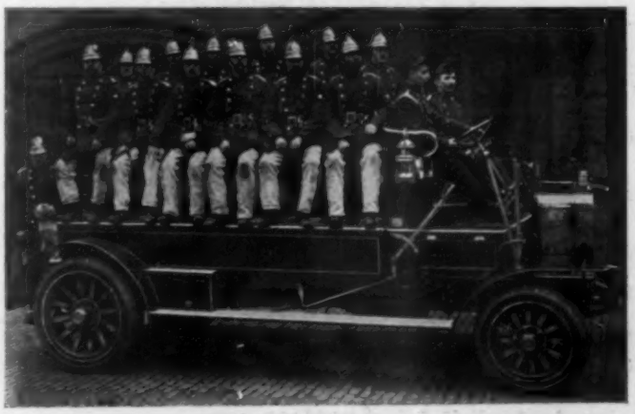
Pont Aven for the night, at the Villa Julia, is the best thing to be had in Brittany. Julia years ago ran a modest little artists' hotel (for Americans, curiously enough), but to-day it has grown with prosperity until there is a great four-story brick and steel structure beside the little inn, and there are electric lights, electric bells and ice water on tap, also whisky—both kinds—the American kind without an *e* and the Scotch kind with an *e*. Blanche Willis Howard's story of "Guenn" will tell you much of the life of the peasant folk of Pont Aven and ought to be read *on the spot* to be thoroughly appreciated.

There are fourteen water mills at Pont Aven and it is locally known as the *Ville des Moulins*. When we do the same thing in America we nickname a place Millerstown and let it go at that. As Laurence Stern said, "They do things better in France."

*(To be concluded.)*

## BRITAIN'S USE OF FIRE BRIGADE AUTOS.

LONDON, June 11.—Automobiles for fire brigade service have found great favor in Britain and their use has been extended to the majority of the large cities. The latest convert to mechanical traction is the Birmingham Central Brigade, which has just taken over the smart vehicle illustrated. Made by the Wolseley Com-



BIRMINGHAM'S "FIRE-LADDIES" ABOARD THEIR AUTO HOSE CART.

pany, at their neighboring works, the chassis has a 30-horse-power four-cylinder engine located beneath the driver's seat but readily accessible by removal of the floorboards. Two ignitions are provided to minimize risk of stoppage, this and the other constructional details following the standard omnibus practice of this firm. Four speeds are provided and side chains take the drive to the rear wheels. As the wagon is intended for city work a big maximum speed is not provided, twenty miles an hour being normal with full load. The body accommodates sixteen men and a supply of hosepiping and accessories beneath the seats. The preliminary trials have served to indicate that this vehicle will do good service at a cost much below that of the horse-drawn hose wagons.

## A JOURNALISTIC WILD FLIGHT OF FANCY.

**"Quite the most original device for protection against flying particles of sand, mud, and even stones, of which the racing autoist is so much in need, was used by Fabry in the recent Targa Florio contest. His steering wheel, which was slightly larger than usual, was backed with mica, and constituted an excellent protection against the wind and dust, as will be seen by an examination of the accompanying illustration."**

It is a New York automobile weekly which is responsible for the transformation of Fabry's steering wheel as described above. Unfortunately for the weekly's accuracy, Fabry's steering wheel was of the ordinary garden variety, as devoid of mica as the wheels of his car. *English Motor*, in one of its weekly facetious sketches, depicted Fabry behind an exaggerated wheel and suggested that it be enlarged still more, mica inserted so as to form a combined steering wheel and wind shield. A Parisian journalist, whose English was probably of the elementary school stage, mistook the London artist's wild fancy for a reality. The New York editor, apparently, must have missed the original and "borrowed" the idea from the French publication.

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***Rise of a New National Institution.***

From the small beginnings of the event inaugurated by the New York Motor Club a few years ago there bids fair to develop an annual observance of national importance—a national charity, in fact—Orphan's Day. The seed planted by the local organization has been fostered by the good offices of the American Automobile Association, and with the latter's aid its benefis were made far reaching, June 12 being observed as National Orphans' Day for the first time this year.

It would seem that there could be no greater charity open to the autoist than to devote his car for a few hours to the enjoyment of as many homeless waifs as it will carry; but, sad to relate, the private owner has not shown any great amount of enthusiasm in making this benefaction. Barring a few clubs, which for reasons of local convenience celebrated some other day, June 12 was observed as Orphans' Day in a number of cities, but it was the men who make and sell automobiles that supplied most of the conveyances. In other words, it was a trade event, rather than the public charity that was intended, and the number of cars fell far short of that required. It is sincerely to be hoped that next year a more generous response will be forthcoming to the appeal on behalf of this most worthy of charities.

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***Present Status of the Air-cooled Motor.***

Certain developments of the past season have led a goodly portion of the automobile public to jump to sudden and wholly unwarranted conclusions regarding what may best be termed the air-cooled situation. Briefly put, these certain developments were nothing more or less than a sudden cessation of interest in the subject on the part of two or three makers, their defection being signalized by bringing out a water-cooled car.

Many have been unable to see anything in this other than that the air-cooled motor had been tried and found wanting. More than one maker had put it to the test and then abandoned it. Nothing could be further from the actual state of affairs. The air-cooled motor long since reached a stage where it needed no defenders. By every test known to the engineer, it has been tried and not found wanting; many of the earlier fallacies concerning it have been brushed away, and in a hundred ways the air-cooled motor has been proved to be all that has been claimed for it, and a little more. But every buyer of a car is not an engineer—the public is not alone not discriminating in mechanical matters, but it is possessed of a tremendous amount of inertia. As a result, the manufacturer of air-cooled cars has been compelled to do a great deal of missionary work, and selling an air-cooled car to a new buyer means making a convert.

With the exception of those few makers who have developed highly specialized systems of air-cooling which are exclusive with them, and who in consequence have numerous special features of construction on their cars, the process of proselyting has been found expensive and burdensome. While the fact that as with steam, once well-converted means faithful to the end, is a great advantage, the work of constantly making new converts is one that the maker without a large and well-organized selling department has found constituted a task in which the game was not worth the candle. In some cases it was not alone necessary to make the convert, but keep him firm in his faith, as he was prone to ascribe other defections to the fact that the car was air-cooled. It soon became apparent that three water-cooled cars could be sold with less effort than it took to dispose of one of the other type where there were no special features to recommend it. Anyone who is conversant with trade conditions in this country is well aware that the average maker is quite willing at all times to give the public what it wants. He is in business to make cars, but he has to sell them, and in the long run he is going to make the car that sells the easiest.

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***Influence of the Auto on Machine-Tool Design.***

From the manufacturer's point of view, there is little doubt but that the most revolutionary improvement brought about by the automobile has been in machine tools. It has been the cause of inaugurating new shop methods, but far more has it been responsible for the transformation of the shop equipment. The first automobiles were built of the most available and cheapest materials. But a very brief period of use was required to show their inadequacy for the purpose. Makers were willing to pay the cost, even though it were many times greater than what had been considered good enough for other purposes. Insistence and an open purchasing account finally won the day.

Then he found himself confronted by a totally new and unexpected problem. He now had the materials, but no machinery to work them with. To quote one of the most prominent makers in the country: "We found it a hopeless task to attempt to turn a piece of alloy steel in one of our old, small lathes. The machine chattered and jumped, threatening to go to pieces every minute. In the course of about two years we scrapped practically every tool we had in the shop and replaced it with new and heavy equipment at many times the cost, though the old machines were still good for several years' service on ordinary work." This is but a single instance of many. Practically every maker in the country has had the same experience, and its mark is visible in every department of machine tool equipment and shop practice. Such machinery represents a large outlay, so that in making it the automobile manufacturer has not blindly reproduced on a larger scale, but has introduced improved methods and processes. As in steel making, machine tool design has advanced more under the influence of the automobile than it would have in several times as many years otherwise.

## SEALED BONNET CONTEST IS ON.

"Mollycoddle procession" was the playful title the Automobile Club of America's Sealed Bonnet Contest had earned for itself before the finish of the first half day, for the time allowance was so liberal, roads considered, that the schedule was a crawl all the way. But thus far it has proved one of the most successful contests ever held. Fine roads and beautiful weather contributed their share, while the cars did their work nobly. Every one of the 47 starters turned up promptly on time at Patchogue, and by 7:30 P.M. practically every one of them had made an equally consistent performance of the slow run back and had either already been checked in at the clubhouse or was waiting its turn at the elevators. S. B. Stevens' 16-20-horsepower runabout, carrying No. 46-A, was the last to start, and consequently finished latest through a strict observance of the spirit of the contest rules. He reached the clubhouse at 9:41, his maximum time being 9:53:00. There was a remarkably small amount of tire trouble all told. The De Luxe rolled in on a flat rear tire, of which its occupants were blissfully ignorant until someone at the club asked if the car ran better that way, but it was about the only one of the 47 to finish that reported anything of the kind, the Darracq evidently getting far more than its share in this respect. The 35-horsepower Oldsmobile runabout driven by W. Folberth and carrying 27-B was the first to check in on the return at 5:27, followed by the three Locomobile touring cars at 5:30 and after that they came so thick and fast that 54th street was blocked and the clubhouse checkers rushed to death. The Haynes runabout with C. B. Warren at the wheel, that took honors in its class in the recent mudlark tourney to Albany, was a prominent early arrival, while the Mora runabout 32 B, driven by W. H. Birdsall, had the distinction of having done the distance on five gallons of gasoline.

As of old, of course, not a few of the contestants declined to be bound by such limitations on the way out to Patchogue from Newtown and "let her out some" to preserve tradition in such affairs, and not let the custom of racing for controls die too easily. As a result the sleepy little Long Island town on the south shore received its first notice of the advent of the contestants by the arrival of a pair that trooped in about half past eleven. These were the De Luxe 24-A driven by C. S. Beach, with the Glide, 4-B, driven by J. C. McCafferty, at its rear wheel, and they had maintained that position all the way out, so that the occupants of the latter car were considerably heavier than when they had started by the addition of a liberal coating of Long Island realty.

Then there was a lull of almost half an hour while the first arrivals formed centers of interest for the local gentry who gathered to inquire what it was all about. Shortly after midday they were supplemented by scattering pairs and single arrivals that soon swelled the procession, and as the cars ran about a mile or so east of the town to check in at the official turn and came back to "stoke up and lubricate," the quiet main street took on an air of animation. It was dusty, very dusty, but that there was no necessity whatever for piling it on one another was amply demonstrated by the trip back. If there has ever been another more orderly "take it easy" procession than the one that characterized the return trip on Wednesday afternoon, no one who has followed American automobile contests ever since there have been such things can remember.

Before starting out in the big De Luxe that brought us back, times and distances were figured to the minute and we rolled along in an easy-going fashion that brought a stare of surprise from other autoists who sped by on the road, going at what is an ordinary pace for the automobile. Ours was "fifteen per," by the autometer, but it seemed more like five, and just to be able to kill a little more time the photographer was given plenty of opportunity to press the button on a number of charming scenes that the eastern end of the south road affords.

## HOW THE GRAPHIC CUP WAS WON.

DOUGLAS, ISLE OF MAN, June 8.—The touring car race for the Graphic Cup has just completed the programme of the Manx meeting. Any powered touring cars costing less than $5,000 are eligible under the rules of this annual competition.

Hutton's 60-horsepower Berliet got away first and managed to do fastest time in three minutes and forty seconds, equivalent to forty-five miles an hour. The 40-horsepower Berliet, owned by Watson, took second place, with three minutes, forty-five seconds, and a similar car driven by Porapato, who, together with Hutton, drove a Berliet in the Tourist Trophy race, was placed sixth.

The event was not without its excitement, for after yesterday's adverse weather the roads were in the worst possible condition. All the cars found some difficulty in keeping on the road, and unluckily No. 13, a 45-horsepower Ariel, smashed up at the corner which had already claimed the Napier and Daimler as victims. The occupants of the car were thrown out and serious injury resulted to one unfortunate. A 35-horsepower Daimler which was running well broke a chain near the finish, otherwise Daimlers might have done better than take third place. No American car was entered, but several automobilists on tour attended.

## POPE MANAGERS HOLD THEIR ANNUAL DINNER.

HARTFORD, CONN., June 17.—On Thursday of last week the Pope managers and their assistants "got together"—that is, they had their annual round-up meeting in Hartford to talk over business plans, and taking a run later in two Pope-Hartford and two Pope-Toledo touring cars to Middletown, where they became the guests of Albert L. Pope, Vice-President of the Pope Manufacturing Company, at dinner. From Toledo came A. E. Schaaf and Harold L. Pope, manager and assistant manager of the Toledo plant, as well as F. C. Gilert, the sales manager. Manager H. H. Rice and his assistant, W. C. Johnson, came from Indianapolis; Robert E. Beck reported from Hagerstown, and E. Hinsman, general manager of the Westfield factory, was in evidence, as was also M. V. Kelley, a publicity man of Toledo, who handles a large share of the Pope interests. Colonel Albert A. Pope came early and staid all day. At the dinner there were in addition to the above, Colonel George Pope, Charles E. Walker, W. C. Walker, Robert L. Winckley and C. E. Morrow, all of the Hartford plant; C. E. Lozier, manager of the Elyria factory, and M. L. Lawrence, superintendent of the Hagerstown plant.

## FIFTEEN FRENCH 'BUSES FOR FIFTH AVENUE.

PARIS, June 13.—New York has come to Paris for a supply of motor 'buses for its aristocratic Fifth Avenue, L. K. Clark, of the New York Transportation Company, having placed an order with the Motor Car Emporium, Limited, of London, for fifteen De Dion Bouton gasoline omnibuses similar to the two hundred at present in use in the British capital. Although manufactured at Suresnes, near Paris, this type of 'bus is better known to Londoners than to Parisians, owing to the more general adoption of this form of locomotion in London than in Paris. Numbers of them, however, are in use in France on long journeys between a series of villages, where the railroad has not yet penetrated. It is expected that the 'buses, which have seating accommodation for thirty-four passengers and are similar in body work to the one now being used experimentally on Fifth avenue, will be in active operation by the end of July.

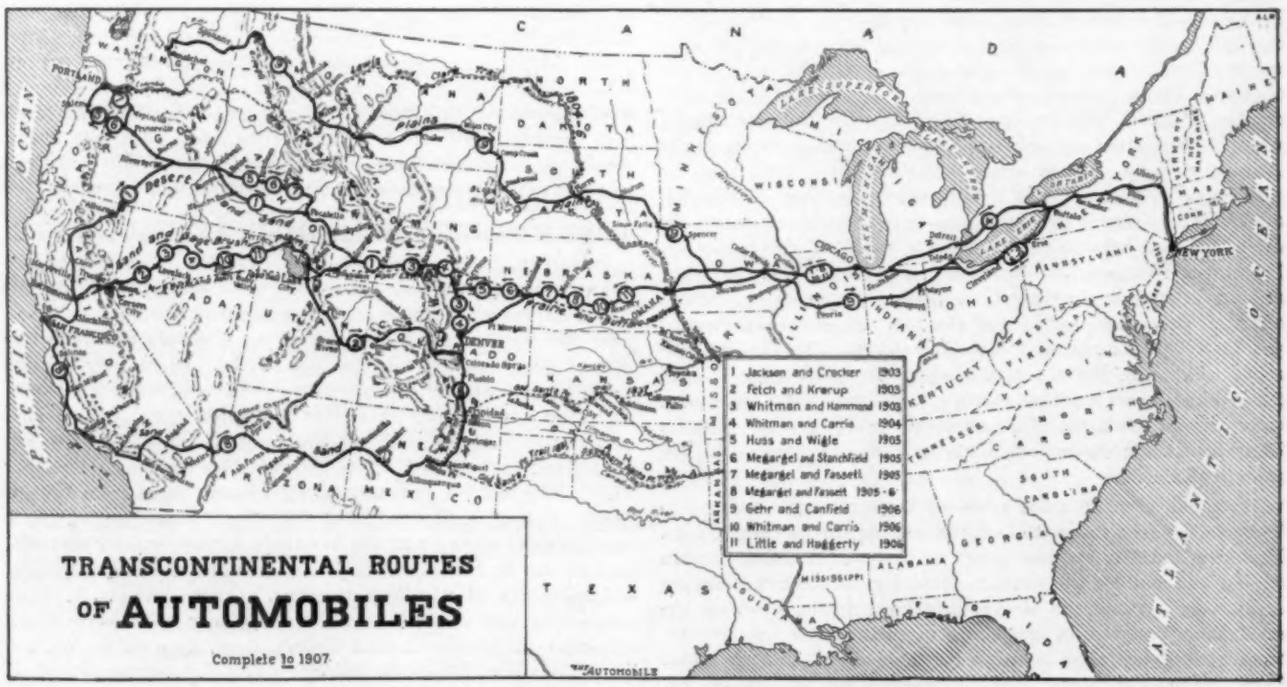
## EDITOR BATCHELDER NOW A BENEDICK.

Wednesday morning, June 12, Amos Grant Batchelder, managing editor of THE AUTOMOBILE, was married to Mrs. Lottie De Wolfe Bates, of Boston, at the Harvard Congregational Church, Brookline, Mass., the Rev. Oliver D. Sewell officiating. The wedding was private, only a few intimate friends of the bride being in attendance. Mr. and Mrs. Batchelder are now enjoying a brief honeymoon in the Adirondacks. Their numerous friends unite in extending congratulations and best wishes.

# TRANSCONTINENTAL FEATURE OF THE BLUE BOOK

THOUGH road information on an extended scale is practically a new departure in this country, great progress has been made in these lines during the last two or three years. For the first time it is possible for automobile tourists to secure reliable information that will enable them to plan trips from any point on the Atlantic seaboard—from Calais, Me., to Norfolk, Va., inclusive—into and through the Middle West by the most practicable routes, with good accommodations practically all the way. The three volumes of the 1907 "Official Automobile Blue Book" contain descriptions and maps covering in the aggregate about 50,000 miles. While this is only a small proportion of the total mileage of highways, it contains by far the best routes threading the entire territory.

The engraving shows one special feature of the 1907 "Blue Book" that has never been attempted before—a summary of the eleven transcontinental trips that have been made up to the present time. This drawing, somewhat larger than the accompanying map, is one of the supplementary features to the New York State edition, and with it appear tables showing the date of start, date of finish, time, place of start, place of finish, names of drivers, make and principal specifications of cars making each one of these trips, including the three transcontinental motorcycle trips between the Atlantic and the Pacific. Nearly everyone of these long trips has been made in a strenuous fashion, with record-breaking part of the original plan, as the tables themselves show. It will be noticed that all of these long runs followed practically the same course from New York to the Missouri river, but from that point west they diverge into four general routes. This was due principally to the place of start or destination of the different trips, and not to any special difference in the road conditions, as there is no good highway between the Missouri and the Pacific ocean. To add to the interest of the diagram as a whole the overland mail route—Pony Express—and the old Santa Fé trail have been charted out, showing how the automobile has used in part the pioneer routes of the mail and commerce across the plains and the mountains.




From the Official Automobile Blue Book, slightly reduced in size.

**TABLE OF TRANSCONTINENTAL AUTOMOBILE TRIPS—TO 1907**

| *Date of Start* | *Date of Finish* | *Time* | *Place of Start* | *Place of Finish* | *Name of Drivers* | *Make of Car* |
|---|---|---|---|---|---|---|
| May 23 1903... | July 26, 1903... | 63 days..... | San Francisco, Cal.... | New York..... | Dr. H. Nelson Jackson... Sewall K. Crocker..... | Winton—2 cyl., 20 H.P. |
| June 20, 1903.. | Aug. 21, 1903... | 61 days..... | San Francisco, Cal.... | New York..... | E. T. Fetch..... M. C. Krarup..... | Packard—1 cyl., 12 H.P. "OLD PACIFIC" |
| July 6, 1903.. | Sept. 17, 1903... | 73 days..... | San Francisco, Cal.... | New York..... | L. L. Whitman..... E. I. Hammond..... | Oldsmobile—1 cyl., 8 H.P. |
| Aug. 1, 1904.. | Sept. 3, 1904... | 32 days, 23 hrs., 20 min... | San Francisco, Cal.... | New York..... | L. L. Whitman..... C. S. Carris..... | Franklin—10 H.P. |
| May 8, 1905.. | June 21, 1905... | 44 days..... | New York..... | Portland, Ore..... | Dwight D. Huss..... Milford Wigle..... | Oldsmobile—1 cyl., 8 H.P "OLD SCOUT" |
| May 8, 1905.. | June 21, 1905.. | 51 days..... | New York..... | Portland, Ore..... | P. P. Megargel..... Barton Stanchfield..... | Oldsmobile—1 cyl., 8 H.P "OLD STEADY" |
| Aug. 19, 1905.. | Nov. 10, 1905... | 84 days..... | New York..... | Portland, Ore..... | P. F. Megargel..... David Fassett..... | Reo—2 cyl., 16 H.P. |
| Nov. 21, 1905.. | June 9, 1906... | 201 days..... | San Francisco, Cal.... | New York..... | P. F. Megargel..... David Fassett..... | Reo—2 cyl., 16 H.P. |
| June 7, 1906.. | Nov. 28, 1906... | 175 days..... | Wenatche, Wash..... | New York..... | Wm. S. Gehr and wife... W. E. Canfield and wife. | Glide—4 cyl., 36 H.P. |
| Aug. 2, 1906.. | Aug. 17, 1906... | 15 days, 2 hrs., 10 min.... | Stockton, Cal..... | New York..... | L. L. Whitman..... C. S. Carris..... | Franklin—6 cyl., 30 H.P. |
| Aug. 16, 1906.. | Sept. 9, 1906... | 24 days, 8 hrs., 45 min.... | New York..... | San Francisco, Cal.... | Richard H. Little..... D. Haggerty..... | Buick—2 cyl., 22 H.P. |

# EARLY SUMMER ACTIVITIES OF THE CLUBS

### Rochester to Hold Its Auto Gymkhana on June 29.

ROCHESTER, N. Y., June 17.—Owing to the fact that many automobilists will be out of the city for the Fourth and will not return for several days thereafter, the gymkhana sports of the Rochester Automobile Club, which were to be held at Genesee Valley Park July 6, will be held at that place on June 29. Invitations have been sent to the members of the Buffalo Automobile Club to come and compete, and the contests will be open to all owners of cars in Rochester, whether they are members of the local club or not.

There will be eleven events: a half-mile speed contest; 100-yard dash, standing start, the front wheels to cross line and then reverse 50 feet; 100-yard dash with one front wheel running along a hundred feet of narrow wooden pathway; obstacle race; tilting at rings; dropping stones or balls into buckets along a 100-yard course while driving at the rate of 15 miles an hour; brake contest; balancing contest; potato race; needle threading contest, open to electric cars only and to have women passengers; riding for scarfs.

All entries must report to the secretary fifteen minutes before the opening of the first contest. Not less than three prizes will be offered in each event, and it has been planned to have these peculiarly suitable to automobile owners. The committee in charge of the sports is composed of H. T. Strong, chairman; H. S. Woodward, William Barry, Jr., J. S. Bingham, A. F. Crittenden, F. E. Mason and Rudolph Schmidt.

The Rochester Automobile Club is planning a return invitation to the Rochester Yacht Club, which promises to be quite an event. Plans are also being made for a great automobile day for Rochester. The road sign work starts this week and there has been low rate automobile insurance secured. The chauffeurs' registration bureau is started and the membership is growing every day. Arrangements have also been made by the club by which any member wishing to visit or tour Canada by communicating with Secretary Van Tuyle have all the bother and trouble in regard to bonding machine, putting up bond, etc., taken care of without any trouble to themselves.

### Chicago Automobile Clubhouse Opening Is in Sight.

CHICAGO, June 17.—Fearful lest the pranks of the conscienceless weather bureau or the dilatory tactics of an unsympathetic contractor may cause another upset of their plans, the directors of the Chicago Automobile Club are delaying positive announcement of a date of the housewarming in the new Plymouth Place structure. It is positively certain, however, that within three weeks' time the club's new home will be occupied. On the evening when the doors are first flung wide the members of the club will make their acquaintance with the interior of the structure, which is expected to serve not only as the headquarters for automobilists of Chicago but for the entire Mississippi Valley district. A few evenings later the first ladies' night will probably be observed. As the labor of the builders has approached an end the full scope of the architects' plans have become manifest and high praise is being accorded them for the attractive decorative effects secured throughout the building.

On the garage floors all work was completed some days ago, but it was decided not to open the garage for storage of cars before the entire building was ready for occupancy. In the culinary department, which is located chiefly on the third floor, every effort is being directed toward completing the installation of fixtures in good season for the opening.

The Chicago Automobile Club is distributing a 24-page booklet containing the new automobile law of Illinois, which goes into effect July 1. The work is of vestpocket size, appropriately indexed, and contains a number of explanatory notes by Sidney S. Gorham, the club's efficient secretary and legal adviser.

### Revising the Rules for the Quaker City 24-Hour Race.

PHILADELPHIA, June 17.—The committee having charge of the coming 24-hour race of the Quaker City Motor Club, on the 28th and 29th of this month, is determined that no possible chance for a protest shall be afforded, such as marked the conclusion of the similar event held at Point Breeze track some weeks ago. Second place was jeopardized in that event by the Frayer-Miller crew pushing the car over the tape after the car had been laid up for repairs. A set of rules governing the running of the race has been promulgated, and the one covering this point reads as follows: "Contesting cars must be running under their own power at the conclusion of the race to receive an award of position."

Wholesale rebuilding of a wrecked car, such as followed the smash-up of one of the contesting Dragons in the last race when it somersaulted through the rail, is aimed at in the following paragraph: "Each contesting car will be allowed five mechanics for replacements." It will be recalled that fully a score of men were put at work on the Dragon and had it in shape for going again in less than two hours. But for some such rule a local manufacturing concern would have a marked advantage over a firm which has possibly sent its car hundreds of miles to enter the race, and with but half a dozen or few men to attend to it.

Another rule prohibits the filling of fuel tanks or the making of even minor repairs on the track. Any such replenishments or repairs must be done in the respective camps, which will all be located in the infield, the parking spaces, which are usually located there, being relegated entirely to the outside.

Additional lighting facilities will be installed, and reflectors will be used to throw the rays ahead and keep the glare out of the drivers' eyes.

The field, if anything, will be larger than in the last event. Two new cars which will start will be the Loziers, entered by Harry Michener and Ralph Mulford, of New York.

### Perfect Score Contestants Refer Cup Back to Trustees.

NEWARK, N. J., June 17.—It was hoped last week to narrow the field of contestants in the recent New Jersey endurance run who finished with a perfect score, by a 24-hour non-stop contest, but all plans of that nature were set at naught by the action of the race committee, which, after a meeting, called the owners of the twelve perfect score cars together again on Thursday and refused to accept the plan which had been suggested for disposing of the cup, thus reopening the whole matter. After considerable discussion the contestants decided to leave the matter with the committee with the recommendation that the cup be left in the custody of the trustees of the club with power to act. The committee endorsed this recommendation, and now the question of the disposal of the cup is simply transferred from the race committee to the board of trustees.

There is much talk now of whether or not the club officials will consider it advisable to make the endurance contest an annual fixture. Several contestants voiced the opinion Thursday night that no contest could be arranged on the roads of New Jersey which would be within the limits of the law, and yet in which several of the competing machines could not finish with perfect scores, and cited the repeated and futile attempts of the committee handling the Long Island endurance contest to narrow the competitors down to one clean score. A contest in which medals or certificates should be given to all who competed without penalization was favored.

### Grand Rapids Club Plans a Run to Detroit.

GRAND RAPIDS, MICH., June 17.—The touring committee of the automobile club is making arrangements for a run to Detroit to compete for a silver cup offered by President George of the State

association. The date has not yet been set, but the committee plans to bring off the event soon.

Agitation has started in the city hall to keep the autos from the parks this summer. The idea is that the dust raised by the autos injures plants and flowers, endangers the lives of children, and is in general a nuisance. These, however, are the ideas of the extremists, and when it comes to carrying them out it is not thought they will have any support. The club itself is in favor of speed regulation, but the members feel that they have as much right to the parks as anybody.

### City and Country M. C. Will Celebrate July 4.

NEW YORK, June 18.—The City and Country Motor Club has announced a jollification for Independence Day. The glorious Fourth will be celebrated by a big run to the Lake Mahopac Clubhouse and an outing during the day on the lake and grounds. In the afternoon there will be a promenade concert by the Thirteenth Regiment band, and there will be athletic games and water sports on the lawn and lake. In the evening there will be special fireworks and a lawn fête, with moving pictures and other entertainments. Arrangements have been made for additional accommodations in nearby houses for the overflow from the clubhouse of those who wish to remain over night at the Lake Mahopac headquarters. The run will be from the 109th street city clubhouse early in the morning.

LAKE MAHOPAC CLUB HOUSE, OF C. AND C. M. C.

### Albany Club's Seven Day Tour Starts To-day.

ALBANY, N. Y., June 20.—A score or more strong, the third annual tour of the Albany Automobile Club left the capital city to-day with horns tooting and the occupants of the cars in the gayest of moods. The tour is to be of seven days' duration and will cover a total distance of 660 miles, the route taking the tourists to Atlantic City via Asbury Park, N. J., and returning via Trenton.

## MR. HOLLANDER MAKES A BUSINESS CHANGE.

E. Rand Hollander, who is one of the best known members of the auto import trade in this country, last Saturday resigned his office as vice-president of the Hol-Tan Company, of New York City, importers of Fiat cars, thereby severing his connection with that concern. He sailed on Thursday for Europe to conclude negotiations for one of the largest international automobile deals yet put through.

Though Mr. Hollander declined to state anything regarding his plans, it is understood that a syndicate has been formed for the manufacture in this country of a famous foreign car, and that he is going abroad to sign the contracts for the purpose.

## AMERICAN CARS IN IRISH RELIABILITY TRIALS.

DUBLIN, June 7.—While the Royal Automobile Club busies itself with fuel limit races and formula-handicapped hill climbs, the important task of organizing reliability trials has devolved on the sister associations of Ireland and Scotland. The annual trials starting from Dublin and from Glasgow rank as two of the principal competitive events of the year and the organizers have the pleasure of seeing the entry lists mount up without trouble to the limit of efficient management.

In the main section of this present event the Irish Automobile Club received fifty-one entries, which were grouped in seven classes on a price basis. A further section was provided for members and private owners, and some twenty-one cars ran under this heading. America was represented by six vehicles, a 32-horsepower Maxwell being piloted by its owner in the private section, and two Cadillacs, two 15-horsepower Fords and a six-cylinder Ford running in the main body.

The weighing in caused much amusement by the serious determination of the clerk of the scales to portion out the necessary sand ballast to the nearest ones, and this conscientious spirit was shown throughout by the observers—rumor alleging that one driver got into trouble for winding up the dashboard watch. The four days' run commenced on Wednesday morning with a trip north to Portrush, one hundred and fifty miles of mixed roads which proved a pleasant surprise in view of their anticipated roughness. The sixty-eight cars which turned up were sent off at minute intervals, but for some reason the order of starting placed the higher powered cars last, rendering a great deal of passing necessary before the close of the day's run. Fifty-nine non-stops were recorded for this day and the remainder all managed to report before the close of schedule time.

Thursday's course led back to Dublin by the inland road through Armagh, a run of 173 miles, sufficiently long when the legal twenty mile and hour limit has to be followed. After passing through Coleraine the procession headed for the nine-mile stretch of beach locally styled Magilligan's Strand. A plank track marked out a safe course over the soft sand and the fine surface soon reached well repaid the trouble.

In the below $1,200 class the 10-horsepower Adams-Hewitt did best with a speed of 34 1-2 miles an hour, the 15-horsepower Ford coming next with 33 and the Cadillac two-seater with 30 miles per hour. Below $1,750 the 16-20-horsepower Calthorpe averaged 42 miles an hour, 8 miles an hour above the next best.

After the speed event the road to Armagh was resumed, but elimination soon commenced, ten in all being absent at the end of the day's run. The majority of these withdrawals were occasioned by the stringent rule disqualifying any car which experienced a stop of longer than one hour.

Waterford was the objective of the third day's run, which included a timed hill climb at Hollywood Hill, over a mile of 1 inch 12 average gradient. The Ford and Cadillac again did well in their class, taking second and third places. The route lay through some of the finest of Irish scenery, but the good weather suddenly failed at lunch time and mist and drizzle were the main features of the trip to Waterford. Fifty-five arrivals reported themselves to headquarters, forty-seven having no trouble.

On the Saturday return to Dublin a timed ascent of Graiguenamanah Hill enlivened the proceedings. The Cadillac took top place in Class B, with the four-cylinder Ford a close second.

Fifty-three cars completed the 569 mile trial, and altogether 34 made entire non-stop runs. In the B Class none of the eight cars were successful in running through with a clean sheet, and so the Cadillac with its two non-stop and the Ford with three to its credit have good chance of award. On the other hand, in Class F, in which the six-cylinder 40-horsepower Ford was placed, all thirteen made complete nonstop performances with the exception of the Spyker, which had experienced no delay till its damaged axle caused its retirement on the last day. The results and final placings will not be known for some weeks, both cost and fuel consumption as well as reliability and the timed tests being considered by the committee.

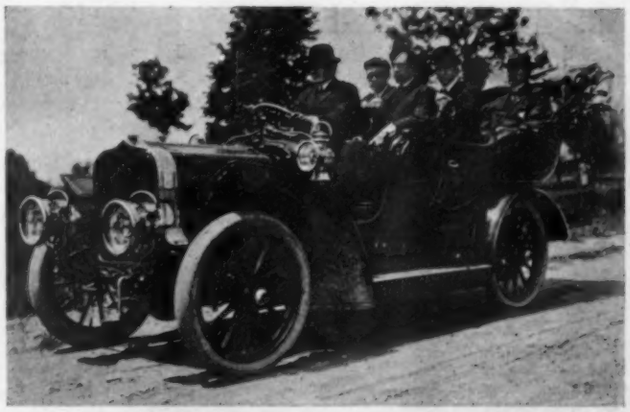
## LOCOMOBILE INSTRUCTION BOOK FOR 1907 CARS.

In preparing an instruction book for the maintenance of its 1907 cars in the hands of the private owners, the makers of the Locomobile have left no stone unturned to render this handy little volume as exhaustive as it is possible to make such a work without going into abstruse technicalities, that frighten the average man at first glance and cause him to lose all interest in the attempt to master its contents, simply because he does not understand the matter and will not be bothered to learn it. It is divided into eighteen chapters, covering every essential of the car, treating them in the order of their importance to the beginner, such as "Lubrication," "Cranking the Motor," "Changing Gears," and the like, then taking up constructional details and the care needed in their maintenance in later chapters, twenty-seven easily understood drawings being used to supplement the text and render it clear. Every possible phase of taking care of the car is treated at length and in such a manner as not to puzzle the veriest tyro, with an additional chapter or two as an appendix for experienced drivers and repair men, though, as a matter of fact, there is a great deal contained in the body of the work that it would benefit this gentry to read and digest. It is safe to say that no Locomobile owner who will take the trouble to "know his little book" thoroughly will encounter much in the shape of breakdowns that will stump him. For convenience in carrying it is sent out by the makers—the Locomobile Company of America, Bridgeport, Conn.—in a neat leather pocket case, which also provides accommodations for other papers. The purchaser's name is stamped on the inner fold in gilt letters.

## BUICK AND JANNEY COMPANIES CONSOLIDATE.

FLINT, Mich., June 17.—The new Janney Motor Company, which has been in process of organization for some time past, was consolidated with the Buick Motor Company last Monday. While losing its individuality in the merger, the Janney cars will bear this name and will be turned out in a separate plant at Flint, where there was talk of locating the factory even before the consolidation. At the same meeting, held last Monday, an increase from $1,500,000 to $2,600,000 capital was voted at a special session of the stockholders of the Buick Motor Company. This only concerns the common, the preferred stock remaining at $600,000. A special meeting of the stockholders of the Whiting Motor Car Company has been called for to-morrow at Jackson, Mich., to vote on the project of also combining with the Buick Company. In any event the plant will remain at Jackson.

The Buick factory at this place is progressing rapidly, the contract for the main building calling for its completion by August 1. This building is 756 feet long by 70 feet wide and two stories high, making it one of the largest of its kind in the country.



**EXECUTIVE HEADS OF THE POPE-TOLEDO PLANT.**

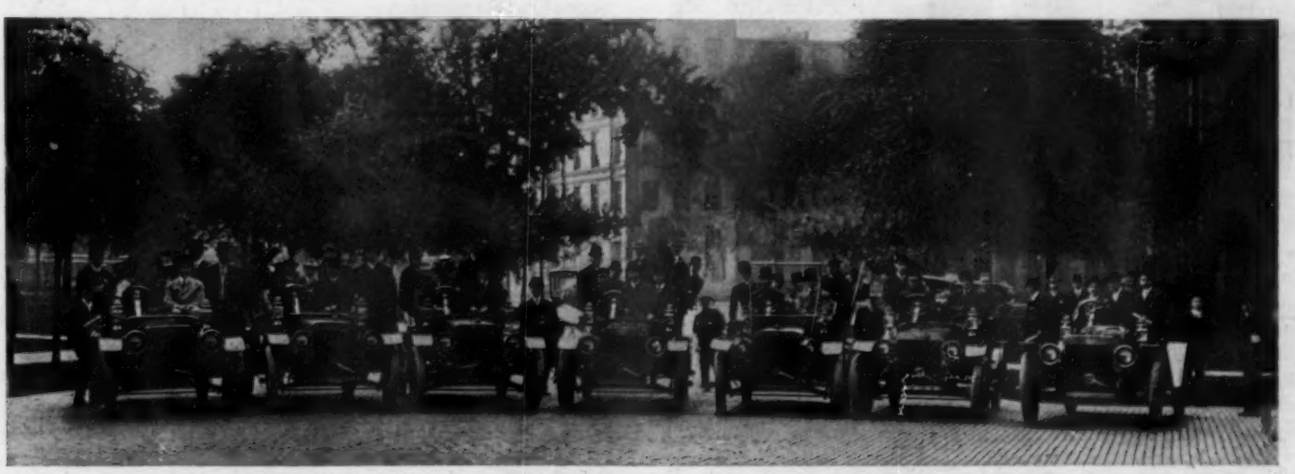
General Manager Albert E. Schaaf is at the wheel. Assistant Manager Harold Pope occupies the seat at his left. In the middle seat in the rear is F. C. Gilbert, Sales Manager, the others being members of the sales department.

## TOLEDO HAS A NEW AUTO PARTS INDUSTRY.

TOLEDO, Ohio, June 17.—Toledo is to have a new automobile industry in the Toledo Auto Parts Manufacturing Company, which has been incorporated with $50,000 capital and which has already begun installing machinery in the old plant of the Kirk Bicycle Company. The concern is headed by W. N. Taylor, for nearly three years general superintendent of the Toledo plant of the Pope Motor Car Company. Others interested in the concern are C. F. Cook, manager of the Globe Machine Company, G. Ohlinger, T. B. Earl and D. White. It is the intention of the company to manufacture all sorts of automobile parts, as well as rebuild and repair automobiles. The company will occupy the old De Luxe factory.

## CONTINENTALS ON FIRST HERKOMER SEVEN.

Tires have spelt defeat more often in a great road race than any other single factor—in fact, the cars themselves have been brought to a point where victory or defeat is almost entirely a matter of the tires used, and the use of tires that cannot stand the pace invariably means a poor showing. In view of this, the report by cable recently received by the New York office of the Continental Tire Company, that the winner of the Herkomer Tour, Edgar Ladenburg, drove a Mercedes shod with Continentals, and that the next six cars to finish also had the same tires is certainly a matter of congratulation. In addition, the first, second and third cars to finish in the Forsten-Rieder Park Race and the first three to finish in the Kesselburg hill climb were all equipped with Continentals.



**THE ADCRAFT CLUB, DETROIT'S FAMOUS ADVERTISING MEN'S ORGANIZATION, ENJOYING A RUN IN FORD SIXES.**

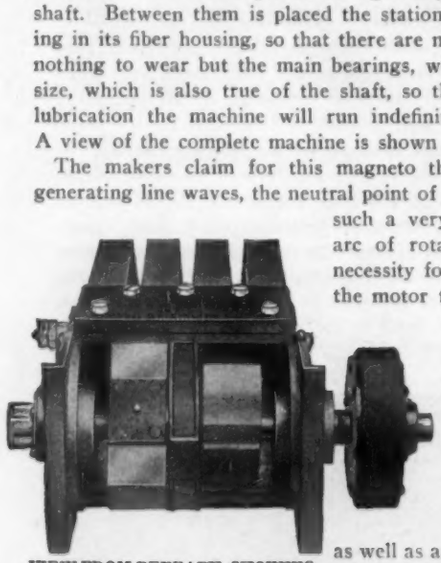
## NOVEL FEATURES OF THE K-W MAGNETO.

Under the title of the "K-W Ignitor," a firm of the same name—the K-W Ignition Company, Whitney Block, Cleveland, Ohio—is marketing a novel form of inductor generator that embodies a number of original features. Both electrically and mechanically it has been reduced to that ideal simplicity which makes for enduring reliability, an essential of paramount importance in all ignition apparatus. A permanent field consisting of four powerful horseshoe magnets constitutes the electrical foundation of the machine, while the inductor consists of two laminated iron rotors placed at right angles and keyed on the shaft. Between them is placed the stationary strip copper winding in its fiber housing, so that there are no moving contacts and nothing to wear but the main bearings, which are of substantial size, which is also true of the shaft, so that with the necessary lubrication the machine will run indefinitely without attention. A view of the complete machine is shown above.

EXTERIOR VIEW OF MAGNETO.

FIBER-ENCLOSED STRIP WINDING.

The makers claim for this magneto that, on account of its generating line waves, the neutral point of the machine represents such a very small portion of the arc of rotation that there is no necessity for synchronizing it with the motor to which it is attached. To insure this the magneto is arranged to run four times the speed of the motor, or eight times faster than the timer, thus minimizing the angular period of no current. Extensive trial, as well as a number of machines in daily use, variously run by friction, belt and gearing, demonstrate that any difference in operation resulting from synchronized attachment and loose driving is a negligible quantity. It is not designed to operate as a self-contained unit, but simply to act as a source of current supply for the usual vibrator coil equipment in lieu of a battery. The wiring connections are the same, and, as the machine generates a powerful current at an extremely low speed, no batteries are needed for starting. The magneto shaft is carried on high-duty ball-bearings running in grease, so that oiling is not necessary more than once a season. Cockcroft & Ballou, 122 West Thirty-fourth street, New York City, are Eastern and foreign distributors for these magnetos.



VIEW FROM BENEATH, SHOWING ROTOR.

## HART-KRAFT COMPANY STARTS ITS PLANT.

York, Pa., June 17.—Ground was broken to-day for the plant of the Hart-Kraft Motor Company, a new corporation which was recently organized in this city. The plant with equipment will cost approximately $50,000, half of which will be for equipment. The building will be four stories, of brick construction, with a frontage of 115 feet and depth of 64 feet, in the principal manufacturing district of the city.

The capacity of the plant when in full operation will be three cars a day. The company intends to make a specialty of two kinds of cars, a delivery car with a capacity of 700 or 800 pounds and a runabout, both of which will be sold at $850. The officers of the new company are: L. M. Hartman, president; R. H. Shindal, vice-president; Granville Hartman, treasurer; Donald H. Yost, secretary; Jonathan Jessop, John W. Hartley and John H. Hartman, are other members of the board of directors.

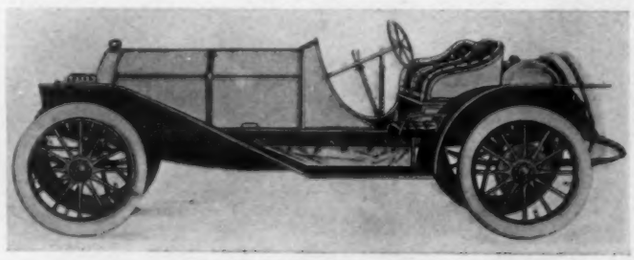
## FINE PERFORMANCE OF MIDGLEY TREADS.

In the recent twenty-four-hour race at the Point Breeze track, Philadelphia, the Autocar that carried off the victory was equipped with Midgley tread tires that had already been run a matter of 3,000 miles before going on the track, in spite of which they finished the 791 miles of grinding round the circle track with no other trouble than two punctures. With the aid of the Midgley detachable rim, these were repaired in 2:10 and 1:50 respectively, and the car was again in the running.

After a short time in running on the road the upper side of the four steel piano wire coils that are embedded in the tread wear off, leaving thousands of inverted staples sticking through to grip the road. The Pope-Hartford that recently won the Mexican road race was also equipped with the Midgley treads, and Herbert Lytle has specified them for his Vanderbilt cup car.

## A NEW RUNABOUT SIX FROM YORK STATE

W. Mason Turner, who has been identified with the business of selling automobiles ever since 1898 and who for the past year and a half has been sales manager of the American Locomotive Company's New York office, has recently been elected president and general manager of the Colt Runabout Company, of Yonkers, N. Y. As suggested by the title of the concern, its object is to place a line of runabouts on the market, known as the Colt and equipped with a six-cylinder motor. The power plants are to be supplied by the Howard Motor Works of the same city, W. S. Howard being well known as the former chief engineer of the Gas Engine and Power Company. Some idea of the lines of the new runabout may be obtained from the illustration of the latest newcomer in this field at the head of the column. It is a fast and business-like appearing car and is designed with ample clearance and a low center of gravity.



COLT SIX-CYLINDER RUNABOUT—THE LATEST COMER.

No rumble seat is intended to be used, the short space back of the seats being designed to accommodate a 20-gallon gasoline tank, beside tools, spares and tires. A detachable mechanic's seat is carried and when in use is fastened to the left hand running board. The wheelbase is 105 inches and the wheels measure 34 by 4 inches all round.

# BRIEF ITEMS OF NEWS AND TRADE MISCELLANY

A. Elliot Ranney & Co., New York agents for the Elmore, have sold 38 cars of this make so far this season, from which it would appear that the three-cylinder motor is still an important factor.

Wichita, Kans., has been selected by the Solid Axle Automobile Company, of Topeka, that state, as the location for its new factory. The company is capitalized at $200,000. L. K. Mannis is president, and O. H. Osborne general manager.

Requests for literature descriptive of Columbia cars from abroad would seem to indicate that the American automobile is becoming widely known in foreign countries, particularly as many of these inquiries received by the Electric Vehicle Company come from very distant places.

"Like father, like son," is a saying that applies to automobiling as well as other things, as witness the fact that Commodore H. C. Roome, the well-known autoist and yachtsman of Miami, Fla., has presented the Lozier which he drove all last year to his son and has invested in a 1907 40-horsepower model of the same make.

When leaving for the other side with his Grand Prix racer, Walter Christie took with him three sets of Diamond tires, which he will use in the race on his own make of removable rims. He has used Diamond tires in his previous races, but this year has adopted larger sizes, employing 34 by 4½ on the driving wheels and 34x4 rear.

Among the six-cylinder cars to participate in the Glidden tour will be the Rolls-Royce touring car of S. B. Stevens. Mr. Stevens at first intended to drive his runabout of the same make, but later changed his mind and will compete with the touring model as a member of the New York Motor Club, of which organization he is the president.

The Harrison Wagon Works, Grand Rapids, Mich., has decided to dispense with its automobile manufacturing department. Superintendent William A. Hatcher and G. A. Anthony have been authorized by the trustees to dispose of the autos in stock and in process of construction and the machinery, all of which is inventoried at $182,000.

The Monarch Motor Car Company, Chicago, whose plant recently suffered a disastrous fire, has acquired a tract of fifteen acres at Chicago Heights, and will at once begin the erection of new factory buildings. The main structure will be 350x500 feet, of brick, steel and concrete construction, with saw-tooth roof, and steel frames will be used for the windows.

Another of the factories to be forehanded with its 1908 product is the Aerocar plant at Detroit, which has had one of its 1008 model runabouts on the road for the past month or so. This car was sent to New York and immediately found a buyer; so great, in fact, has the demand for Aerocars become, that the enlargement of the factory would not await leisurely plans, but had of necessity to be rushed.

In a letter dated May 28 at Genoa, Georges Dunuy, who is outlining the route of the Gold Cup Tour is very enthusiastic in praise of his Stearns car, dwelling particularly on the ease with which it took the worst of the grades in France, Belgium and Italy. He has been so pleased with its ability that he has taken every opportunity to show automobile agents in the various towns he has stopped at just what the car can do.

In a Thomas Speedway Flyer—a duplicate of the car recently purchased by W. K. Vanderbilt, Jr., E. C. Richard and George M. Davis left Buffalo last week with the intention of going round the Glidden Tour circuit in six to seven days. Their primary object is to make a careful inspection of the roads, and on their return a report will be made of the surfacing of the different roads.

E. Linn Mathewson's successful attempt on the 50-mile track record at Denver, when he reduced it to 55:43 4-5, is the culmination of a long line of struggles to lower this mark by drivers of Thomas cars, A. Stanley Zell, of Baltimore, starting it at 1:06:36, Ollie Savin bringing it to 1:06:19 at Chicago, which stood until Ernest Kelly took off a good three minutes at Philadelphia, which left it at 1:03:19¾, all the trials being made in Thomas Flyers.

The Bellefield Motor Company has been formed by J. H. McClaren, George D. Kelley and Frank P. Blackmore. Mr. McClaren is well known in Pittsburg automobile circles, having been the originator of the auto 'bus line which operated in and around the city for over a year. He is interested in several important automobile inventions and with his associates will engage in a manufacturing business in Pittsburg.

In reports from Europe of touring arrivals at prominent points reached by tourists, the number of American cars is noticeably on the increase. The George N. Pierce Company of Buffalo has decided to extend its system of cars by the establishment in Paris, France, of a department for the supplying of parts, and Mr. N. S. Goodsill, 11 Rue Scribe, Paris, will look after this department. This radical departure will aid Pierce tourists materially.

In securing the Seventh Regiment armory at Chicago for the exhibit of commercial cars during the next Chicago show, Manager Samuel A. Miles has added 30,000 square feet of exhibiting space. Although the commercial vehicle exhibit will be run coincident with Chicago's eighth annual show, it will be known as the first annual exhibition of commercial cars, for the purpose of establishing its identity as a distinct feature of the industry.

On the same day that the New York Motor Club was holding its gruelling endurance run up the state, with Berliet cars doing press duty, another of the American Locomotive Company's products was being put to an equally severe test. This was James Rascovar's Berliet, which he drove over Storm King mountain, opposite West Point, with six passengers besides the driver. The roads could not have been worse, but the car did admirably despite its heavy load.

As a result of the great amount of work that has been devoted to it, the information bureau of the American Automobile Association is replete with data concerning routes for tours in this country, while a membership in the organization is even more valuable to those autoists who contemplate touring abroad. The A. A. A. credentials not only serve as an introduction at the clubs in Great Britain and on the Continent, but also enable one to obtain information concerning foreign routes.

When last heard from, Frank Miller, president of the Bridgeport Automobile Club, was still grinding out miles in his 24-horsepower Premier touring car in the attempt to break the non-stop road record, which he tackled on June 3. He has been jogging back and forth between Bridgeport and New York, averaging a little better than 200 miles a day despite the rough and muddy roads, a little variety being had by taking side trips into the hills, besides going round a circuit over the rolling country back of Bridgeport. In eight days' running Mr. Miller had covered 1,877 miles.

The Dragon Automobile Company, of Philadelphia, has been building some high-powered motors in addition to those designed for its Vanderbilt cup cars, and two of them have been purchased by E. O. Spillman the engine builder, of North Tonawanda, N. Y., who intends to install them in a 12-meter launch now building. The motors are to be coupled tandem and will develop 250 horsepower. The new boat will be named the *Dragon* and is a copy of *Niagara III* so far as the hull is concerned. The latter cleaned up everything on the lakes last year, so that the performance of her new rival will be watched with interest.

## RECENT BUSINESS CHANGES.

Apperson Bros.' Automobile Company has removed its salesroom and office from Fifty-second street and Broadway to Fifty-fourth street, just west of Broadway.

H. A. Heinel Company, gasoline engine manufacturers, Wilmington, Del., has sold its business to Jones & Schumacher of that city. For the present the new firm is located at 1100A West street.

Charles R. Johnson, former manager of the Buick-Johnson Automobile Company Grand Rapids, Mich., has sold his interest to George Waller, who has taken the active management. Mr. Johnson will engage in the lumber trade in northern Wisconsin.

The Rambler Garage Company has succeeded the C. G. Norton Company at Milwaukee, Wis., as representative of Thos. B. Jeffery & Company in that city. The present quarters on Broadway will be enlarged by the addition of another story. The officers of the new company are: Charles T. Jeffery, president; Harold W. Jeffery, vice-president and treasurer; O. C. Hutchinson, secretary; A. W. Shattuck, resident manager.

J. E. Demar, the well-known importer of English Daimler cars, has resigned his connection with that vehicle and organized the J. E. Demar Company for

the manufacture of automobile specialties, with a factory occupying over 8,000 square feet at 244 to 250 West Forty-ninth street, New York. The new company will make tops, slip covers, etc., and has been appointed sole metropolitan selling agents for the Crescent detachable rim.

Announcement was made last week that the Willyoung Appliance Company of Yonkers had absorbed the business of the G. J. Schultz Company, makers of Diamond spark plugs. These plugs have been successfully marketed for a number of years and are credited with the biggest order ever given in the spark plug line, being fitted in all Ford runabouts. Elmer G. Willyoung, president of the Willyoung Appliance Company, says the factory is now exceptionally busy.

## NEW AGENCIES ESTABLISHED.

Ralph Hamlin, Los Angeles, Cal., has taken the agency for the Lozier in that territory.

The Hartford Auto Exchange, 39 Imlay street, Hartford, Conn., has secured the agency for the Berkshire line.

New showrooms have been opened at 2128 Broadway, between Seventy-fourth and Seventy-fifth streets, by the Auto Improvement Company, of 316 Hudson street, manufacturers of the "Ever Ready" speedometers, tire tools, vulcanizers, etc.

Sales Manager George K. Wheeler of the Columbus Buggy Company, Columbus, O., has established a very important agency for the Columbus Electrics with the Autocar Sales Company, Broadway and Eightieth streets, New York City. The new agents are well fitted for the work, Manager John Milliken having had ten years of electric vehicle experience.

W. D. Newerf, Pacific Coast representative of the Goodyear Rubber Company, with headquarters at Los Angeles, Cal., will establish a branch house in San Francisco on Golden Gate avenue. A. C. Leonard, of Los Angeles, will have charge of the new branch. The Oregon Motor Car Company of Portland has taken the Goodyear agency for that territory and A. G. Emmons, at Fresno, Cal., will handle that portion of the State.

The Winton Motor Carriage Company has established its own branch house in Seattle Wash., at 715 East Pine street, where commodious quarters have been secured. Winton interests in the Northwest have been growing so rapidly as to demand closer attention than could be given otherwise than through a branch house. George W. Miller, formerly manager of the Broadway Automobile Company, of Seattle, is in charge. The Winton Company now has nine branch houses in this country and London.

## PERSONAL TRADE MENTION.

Leon M. Bradley of Boston, well known in automobile journalistic circles, will hereafter be identified with the American Motor Car Manufacturers' Association.

L. I. Ollier, who has been manager for the Chicago branch of R. M. Owen & Company, has resigned and gone to Los Angeles, Cal., where he will open a manufacturers' agency.

C. A. Benjamin, vice-president and general manager of the Aerocar Company of Detroit, has been spending a week in the Eastern cities, visiting the principal Aerocar agencies.

A. F. Eckstein, who has been connected with the Thomas B. Jeffery Company at Kenosha, Wis., has joined the forces of the Milwaukee Motor Supply Company, Milwaukee, Wis.

President E. H. Parkhurst of the Peerless Motor Car Company, who has been on an Eastern trip to New York and other business centers, has returned to the factory at Cleveland.

Fay L. Faurote, the well-known publicity manager of the Olds Motor Works, Lansing, Mich., was married Wednesday, June 12, at St. Louis to Miss Emily Ethel Bacon, daughter of Mr. and Mrs. Frederick H. Bacon of that city. The honeymoon is now being enjoyed by the happy pair by a trip via automobile through the Eastern States.

## GOOD SALESMEN DESIRED.

The Michelin Tire Company, whose factory at Milltown, N. J., is being prepared for a big output for the coming season, is organizing its sales department and it is reported has a few vacancies for good men.

## BOWSER ASKS INJUNCTION.

Charging unfair methods of competition, suit has been filed in the United States district court at Cincinnati by S. F. Bowser & Co. against the National Oil Pump and Tank Company, of Dayton. The action is supplementary to a suit for infringement of patent which the Fort Wayne firm filed against the Dayton concern some months ago. The argument on the preliminary injunction asked for by plaintiff will be heard on June 28.

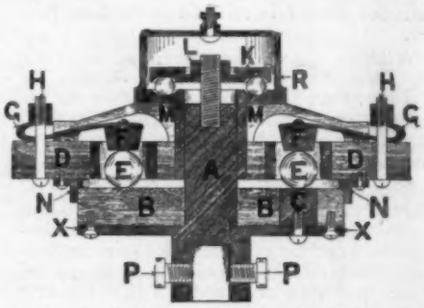
## ANOTHER ROBERTS PATENT.

Letters patent No. 854,709 have just been granted to Joseph Abrahamson, of the Robert Instrument Company, 50 Shelby street, Detroit, Mich., covering improvements in electrical measuring instruments, and specifically in the small pocket volt and ammeters for battery-testing purposes, with the manufacture of which this company has long been identified. The exterior and interior of the instrument broadly covered by the patent are shown in the accompanying illustrations, while the principal points of the invention protected by the patent are included in Claim I of the latter, which reads as follows:

"I—In an electrical measuring instrument, the combination with the casing, its slotted dial and scale thereon, of a coil in the casing forming part of a conductor adapted to convey the current to be measured through the coil, said coil being flattened on opposite sides and formed of a ribbon like conductor of large capacity the individual turns of which are separated by air spaces, a shaft pivoted in the flattened sides of the coil, an armature and a balanced index hand upon the shaft and a permanent magnet secured upon the coil and co-operating with the armature."

## INFORMATION FOR AUTO USERS.

**Darmac Commutators.**—No system of ignition is stronger than its weakest part, say the makers of the Darmac ball-bearing contact timers, the Darmac Commutator Company, 220-222 East Fifth street, St. Paul, Minn., and the otherwise perfect system is made worthless by the non-dependable timer. To obtain a full spark of exact duration, at the same relative time in each cylinder, and to have the timing under exact control means the maximum power for the




SECTIONAL VIEW DARMAC COMMUTATOR.

motor. This is accomplished by the Darmac timer or distributor because it will not miss a contact at any speed and it cannot vary its timing, all points being rigid as to position and the ball-bearing contact reduces friction to a minimum. It is built entirely of tool steel and special friction fiber, with special provision to prevent disalignment, so that it will wear indefinitely, the slight embedding of the ball points in the fiber disc as the result of service only tending to increase its efficiency, as a greater section of the ball face then comes in contact with the segment. In other words, like the classic socks, "the longer they wear the better they get." The accompanying illustration, showing a timer in section, is practically self-explanatory. **D** represents the stationary fiber disc; **A** the spindle; **B** the revolving fiber block carrying the tool-steel contact; **C F** the contacts, and **B** the balls. The timers are made for all types of motors, from single to six-cylinder, and both plain and with distributors.

**A New Tire Saver.**—The makers of the Hercules leather tires, the Republican Tire & Shoe Company, 449 West 53d street, New York, have just inaugurated a new process for retreading old and worn tires and by which the old shoes may be ready for service again by the addition of one-piece red or white treads in the course of 24 hours. These treads are quite thick in the center, tapering at the edges, and are claimed to wear much better than the ordinar repair, at half the price. Each tread is fully guaranteed, and both the rubber and leather non-skid treads are covered by patents. Their low first cost and great durability are strong recommendations.

**Crescent Removable Rims.** — Hot weather and the job of changing a huge shoe on a dusty road in order to mend a puncture, form a combination that the average would rather sidestep every time and how much more the amateur? The removable rim has proven its worth in racing, but has been somewhat slower in achieving recognition at the hands of the tourist. The Crescent rim, formerly known as the Harburg, made by the Crescent Parts Company, of New York City, has a record of 3 minutes for a complete change and is receiving deserved recognition at the hands of the trade.